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ORIGINAL

NUCLEAR REGULATORY COMMISSION ISSUANCES

July 1982

COMPLETED

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NUREG-0750
Vol. 16, No. 1
Pages 1-400

NUCLEAR REGULATORY COMMISSION ISSUANCES

July 1982

This report includes the issuances received during the specified period from the Commission (CLI), the Atomic Safety and Licensing Appeal Boards (ALAB), the Atomic Safety and Licensing Boards (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions For Rulemaking (DPRM).

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

U.S. NUCLEAR REGULATORY COMMISSION

Prepared by the Division of Technical Information and Document Control,
Office of Administration, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555
(301/492-8925).

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John F. Ahearne
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James K. Asselstine

Alan S. Rosenthal, Chairman, Atomic Safety and Licensing Appeal Panel
B. Paul Cotter, Chairman, Atomic Safety and Licensing Board Panel

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Cite as 16 NRC 1 (1982) CLI-82-12

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-289**
(Restart)

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1) **July 16, 1982**

The Commission denies a request by the Appeal Board for authority to hear three safety issues raised by the Board *sua sponte*, and decides that the issues will be dealt with by the staff and the Commission outside the context of this adjudicatory proceeding.

ORDER

On June 30, 1982 the Atomic Safety and Licensing Appeal Board issued an Order requesting authorization to hear three issues *sua sponte*. Those issues relate to: (1) the repair of the corroded steam generator tubes; (2) whether there has been any cracking in some high pressure nozzles or their thermal sleeves; and (3) possible distorting of auxiliary feedwater spargers. The Board believes these safety issues are important to the public health and safety.

The Commission agrees with the Appeal Board that these are important issues which must be satisfactorily resolved before the Commission makes a decision on the restart of Unit One. However, it does not believe that these matters should be adjudicated in this instance by the Appeal Board. Each of the three issues can and will be dealt with by the NRC staff and the Commission, as part of the review of uncontested issues that will take place prior to a decision on restart. There will be other safety issues relating to Unit One that also will be treated outside the context of the adjudicatory proceeding.

The Commission directs the NRC staff to examine thoroughly each of the issues raised by the Appeal Board and to provide the Commission with its analyses and findings on the issues prior to the time the Commission is to make its decision on the restart of Unit One.

It is so ORDERED.*

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 16th day of July, 1982.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Reginald L. Gotchy

In the Matter of

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1)

Docket No. 50-289-SP
(Restart)

June 30, 1982

MEMORANDUM AND ORDER

In the six months since the TMI Restart Board issued its decision on Plant Design and Procedures[1] we have noted three new safety-related matters, all of which appear to be relevant to the TMI-1 reactor. We would like to raise these issues, *sua sponte*, in connection with our appellate review of plant design and technical issues. We believe the matters that we wish to pursue are important to the public health and safety, and can be satisfactorily resolved on the basis of affidavits submitted to this Board.

This is not the usual operating license proceeding; therefore, we recognize that our proposal may require Commission approval. See 10 CFR 2.785(b)(2). Our review of appeals from the decision of the TMI Restart Board is well under way. Accordingly, we respectfully request that the Commission promptly approve our undertaking a review of these issues *sua sponte* so that we may resolve them along with the parties' appeals. The proposed new issues are as follows:

---

[1] *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), LBP-81-59, 14 NRC 1211 (December 14, 1981); (Partial Initial Decision, ¶¶589-1329).

1. As is widely known,[2] the steam generator tubes at TMI-1 have been subjected to corrosive attack as a result of contamination of the reactor coolant system. While steam generator tube corrosion is not directly relevant to the accident at TMI-2, the initiation of a highly corrosive agent into the reactor coolant system may have been the result of poor maintenance or training, which are major areas being considered in the TMI-1 restart hearing. Therefore, we should be informed of the results of investigations by licensee and staff into the cause of the reactor coolant system contamination and corrective action proposed to prevent its recurrence.

A letter dated April 30, 1982, from H. D. Hukill, GPU Nuclear, to the NRC Office of Nuclear Reactor Regulation discusses the plan for repair of the steam generator tubes. This will involve a technique of expanding and resealing the tube walls at points below where corrosion attacked the tubes. The letter indicates that the repair operation will begin after qualification testing of the tube expansion technique.

This resealing of the TMI-1 steam generator tubes constitutes a unique operation. We believe that we should be fully informed of the qualification testing of the tube expansion technique and its acceptance based on those tests. The results of the inspection program to determine any corrosion damage to reactor internals should also be provided. Finally, we should be kept informed of the progress of the repair program. This will enable us to determine promptly whether the proposed repair methods are adequate to reasonably assure the protection of public health and safety.

Based on the above discussion, we request licensee to answer the following questions:

(a) What are the results of licensee and staff investigations into the cause of the reactor coolant system contamination? What corrective actions have been implemented to prevent its recurrence?

(b) What methods of qualification testing were developed for the tube expansion technique? What are the results of the qualification testing?

(c) What are the results of the inspection program to determine any corrosion damage to reactor internals?

(d) What is the progress of the steam generator tube repair program? Reports should be provided periodically.

2. As a result of the March 1979 accident at Three Mile Island, the Commission ordered the Rancho Seco reactor (another Babcock and Wilcox facility) to shut down pending the completion of specified short-term actions intended to enhance the reactor's response to certain operational transients. In addition the licensee was to implement "as promptly as practicable" additional long-term modifications.

---

[2] See, *e.g.*, letter dated January 25, 1982, from E. Blake, Jr., to Administrative Judge Milhollin; also PNO-TMI-81-22, November 23, 1981, and PNO-TMI-81-22A, December 1, 1981.

During a hearing called to consider whether these actions were necessary and sufficient to provide continued reasonable assurance that the facility will respond safely to feedwater transients, the hearing board considered, *inter alia*, the issue of the number of high pressure injections that should be permitted.[3] The Appeal Board was not satisfied with the resolution of this issue and requested further information. ALAB-655, 14 NRC 799, 810-11 (1981).

A few weeks after this request to the Rancho Seco licensee, cracking in some high pressure nozzles and/or their thermal shields was discovered in the HPI systems of Crystal River and an Oconee unit, both B&W reactors. The Sacramento Municipal Utility District (SMUD), licensee for Rancho Seco, undertook ultrasonic and x-ray studies of its HPI system and discovered one thermal shield missing, two others cracked and loose. This led to a program of redesign and replacement of the thermal shields that is still under way.

Because the TMI-1 reactor is generally similar to the Crystal River, Oconee and Rancho Seco reactors and the HPI system is critical to its safety systems, we request licensee to provide full and complete answers to the following questions:

(a) Since the HPI nozzle problems in other B&W reactors have become known, have the TMI-1 HPI nozzles and their thermal sleeves been inspected by appropriate non-destructive testing methods? If so, are all sleeves in place? Is any cracking evident in either nozzles or thermal sleeves?

(b) If the thermal sleeves are held in place only by weld buttons (as in Rancho Seco) what is being done at TMI to correct this design to ensure that sleeves will not move out of position?

(c) What plans do you have for limiting thermal shock to the HPI nozzles and sleeves?

(d) What periodic non-destructive testing procedures do you propose for the HPI system when TMI-1 becomes operational?

3. A situation similar to that in Item 2 arises at TMI because of recent difficulties that some other reactors, including at least two B&W facilities, have recently faced in connection with the auxiliary feedwater spargers at the top of the steam generators.[4] Several of these spargers have been found to be distorted and partially separated from their entrance nozzles. B&W has proposed a new design which is being installed in at least two reactors. Again, because this is a critical safety matter we request the licensee to provide answers to the following questions:

(a) Is the auxiliary feedwater sparger installed in TMI-1 an internal sparger similar to those which have been found damaged in some other B&W reactors?

---

[3] This concern arose because of the proposal by the staff for greater operation of the high pressure injection (HPI) system. Each operation produces a thermal cycling of the HPI nozzles, which could eventually cause the nozzles to crack.

[4] See PNO-III-82-38, April 13, 1982; also PNO-III-82-38A, April 16 and April 20, 1982, re Davis-Besse and Oconee reactors.

(b) If the answer to Question (a) is "yes", please describe the modifications you propose to make and the schedule for such modifications.

(c) If the answer to Question (a) is "no", please describe the auxiliary water injection system that is used at TMI-1 and state either your reasons for believing this is satisfactory, or what modifications you propose.

Subject to Commission approval, licensee's response shall be in our hands by close of business on July 26, 1982. Any replies to licensee's response shall be in our hands by close of business on August 16, 1982.

It is so ORDERED.*

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

---

*Dr. Gotchy agrees in principle with the matters discussed herein but was unavailable to review this Memorandum and Order.

CLI-82-12A*

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
SECRETARY

March 18, 1982

Docket Nos. 50-275-OL
50-323-OL

Byron Georgiou, Esq.
Legal Affairs Secretary to
the Governor
State Capitol Building
Sacramento, CA 95814

Dear Mr. Georgiou:

There are currently pending before the Commission petitions filed by Governor Brown and the Joint Intervenors in this proceeding for review of the Atomic Safety and Licensing Board's decision in ALAB-644, 13 NRC 903 (June 16, 1981). On March 18, 1982, the Commission declined to grant the petitions for review. 10 CFR 2.786(b)(5). The views of individual Commissioners are enclosed.

Sincerely,

Samuel J. Chilk
Secretary of the Commission

Enclosure:
Separate views of Chairman Palladino
and Commissioners Gilinsky, Bradford,
Ahearne and Roberts

---

*CLI number was not assigned until July 1982.

cc: Service List

IDENTICAL LETTERS SENT TO:

Lawrence Coe Lanpher, Esq.
Kirkpatrick, Lockhart, Hill,
Christopher and Phillips
1900 M Street, N.W., Suite 800
Washington, D.C. 20036

Joel R. Reynolds, Esq.
John R. Phillips, Esq.
Center for Law in the Public Interest
10951 West Pico Boulevard, 3rd Floor
Los Angeles, CA 90064

SEPARATE VIEWS OF CHAIRMAN PALLADINO

I would extend the time for the Commission to review this Appeal Board decision on Diablo Canyon seismicity. I would not make a final decision until the Commission knows more about the results of the Diablo Canyon reverification and has concluded the process with respect to its inquiry about Mr. Newmark, the staff's key expert on the seismic design of the Diablo Canyon plant.

I should say that my inclination, at this time, is not to review ALAB-644. However, I would prefer to have in hand the results of the matters I have mentioned above before I make a decision on this matter.

OPINION OF COMMISSIONERS GILINSKY AND BRADFORD ON COMMISSION REVIEW OF ALAB-644 (DIABLO CANYON SEISMIC PROCEEDING)

The Commission has had in hand since June 16, 1981, the Appeal Board's decision approving the seismic design of the Diablo Canyon nuclear power plant. The Board's decision deals with the most important issue in this Operating License proceeding in view of the discovery of a nearby earthquake fault after plant construction was well under way, and the subsequent need to redo the seismic design.

Normally, the Commission allows itself 30 days to decide whether to review an Appeal Board decision. If the Commission does not act in that time the decision is not taken up for review. In this case, the General Counsel provided the Commission with a twenty-two page memorandum on the legal merits of the Board's decision and, at the Commission's request, the Office of Policy Evaluation, after a six-week study involving four consultants,[1] produced an 89-page analysis of the technical aspects of the decision. After receiving these memoranda, the Commission found itself unable to decide whether to take review. Altogether over a period of nine months, the Commission extended the time for deciding whether to take review thirteen times. This week the last extension was allowed to lapse.

The issues in the Appeal Board decision need to be distinguished from those of the ongoing reverification of the Diablo Canyon seismic design which has received so much attention recently. The Appeal Board decision deals with whether the *bases* of the seismic design, as formulated by the applicant and approved by the NRC staff and Licensing Board, are adequate. The reverification program assumes the correctness of those bases and looks into whether they were properly applied in the detailed design of the plant structures and equipment.

The Appeal Board decision deals with the fundamental "response spectrum" at the site — in effect, the frequency and maximum amplitude of the various oscillations of structures attached to the plant's foundation. These maximum oscillations are calculated on the basis of the agreed-upon maximum earthquake, and all safety-related structures and equipment must be designed to withstand them. The Appeal Board deals, in particular, with the adequacy of the new seismic design standard chosen after the discovery of the nearby Hosgri fault, which had not been taken into account in the original design of the plant. The case presents a number of novel problems, particularly as the assumed earthquake location is very near the plant, and the choices inescapably involve a good deal of judgment.

The difficulty the Commission found itself in, as the nine months of indecision betrays, is that the Appeal Board's decision is not a satisfactory one. On some points it can probably be rescued by different reasoning, though even that would not eliminate the need for review because of the decision's precedential significance. On at least one point, however, the use of the so-called "tau effect" to permit a substantial across-the-board relaxation of the seismic standard applied to the plant, the Board's reasoning is utterly inadequate and is very likely wrong.

Without Commission review, not only will questions remain about the correctness of the Diablo Canyon seismic design, but the Board's decision will stand as an unfortunate precedent which will undermine application of the Commission's regulations on seismic design.

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[1] We would note that one of the outside consultants retained by the Commission was also acting as a consultant on seismic issues to the applicant in the Summer case. We would have preferred to disqualify this expert in order to avoid any actual or apparent conflict of interest.

Procedural Background

The NRC issued the Construction Permits for Diablo Canyon Units 1 and 2 in 1968 and 1970, respectively. These permits were issued on the assumption that the plants could be expected to face, at most, a 6.75 magnitude earthquake at a distance of about 20 miles. In 1971, Hoskins and Griffiths published a paper which established the existence of a fault approximately 3 miles offshore of the Diablo Canyon site. The existence of the fault — called the Hosgri fault — was confirmed in a 1974 study. As the plant was largely constructed, this forced a reevaluation of the seismic design at an awkward time.

After reanalysis, the applicant, the NRC staff and the ACRS concluded that, with certain specified modifications, the plants could withstand the more severe earth movements which must be assumed as a result of the Hosgri fault discovery. This followed a determination by the U.S. Geological Survey that the maximum Hosgri fault earthquake against which the plant had to be designed was one of magnitude 7.5. The applicant and NRC staff did not believe this was the right choice, but apparently convenience dictated its acceptance for the purposes of the proceeding. Much of the difficulty in this case stems, in our view, from the formal acceptance of this standard, but the less-than-wholehearted application of it.[2]

In the course of the Diablo Canyon Operating License proceeding, the Licensing Board conducted evidentiary hearings on the seismic issues between December 1978 and February 1979. At the close of this part of the proceeding, the parties stipulated, and the Board agreed, that it would be conservative, in view of the existence of the Hosgri fault, to attribute a magnitude of 7.5 to the Safe Shutdown Earthquake ("SSE").[3] The Licensing Board also fixed the maximum vibratory ground motion that an SSE might induce at the plant site and concluded that the seismic reanalysis and redesign were adequate to withstand this SSE.[4]

The Joint Intervenors appealed several aspects of this decision to the Atomic Safety and Licensing Appeal Board, and were joined in their appeal by Governor

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[2] No hearings were held when the Hosgri fault was discovered. The persistence of litigation over these issues to this day suggests that it would have been wise policy, as well as good law, to reopen the construction permit hearing at that time.

[3] The Commission's regulations, 10 CFR Part 100, Appendix A, define the "Safe Shutdown Earthquake" as being "that earthquake which is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional."

The specific structures, systems, and components which must remain functional are those which are necessary to assure: "(1) The integrity of the reactor coolant pressure boundary, (2) The capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to the guideline exposures" of Part 100.

[4] In the Matter of *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453 (1979).

Brown, participating as an *amicus curiae*. On June 16, 1981, the Appeal Board issued its decision affirming the Licensing Board's finding that the Diablo Canyon plants were adequately designed to withstand a 7.5 magnitude earthquake on the Hosgri fault. Since that date, the case has been before the Commission awaiting its decision on whether or not to take review.

Technical Background

As stated above, after the discovery of the Hosgri fault and the subsequent analysis by the U.S. Geological Survey, the parties to the Diablo Canyon proceeding agreed to an earthquake of magnitude 7.5 on a nearby portion of the fault as the fundamental seismic event against which the plant would be designed. Since the plant was in large part already constructed at this point, the reanalysis and redesign understandably did not proceed as they would have in a plant yet to be built. Every advantage was taken of slack in safety margins left in the pre-Hosgri analysis, both in developing the response spectrum and in its application. To cite a couple of examples: a larger damping value was used in analyzing structures (7 percent instead of the earlier 5 percent), which reduced the effect of ground vibrations on the structures. At the same time, credit was taken for the actual — "as-built" — strengths of materials (rather than for the minimum required strengths, as is the usual practice) so that larger vibrations became tolerable. These choices were not improper, but they do add significance to further substantial relaxations in the seismic standards for the plant on the basis of the "tau effect". The point is that these further relaxations come on top of a redesign that has already shaved safety margins to the extent permitted in the regulations.

Probably most important along these lines was the choice of the earthquake record used in developing the response spectrum, and the manner in which that record was used. Because no record was available from a station close to a 7.5 earthquake, the applicant used the seismic record, known as the Pacoima Dam record, from a recording station near the center of a 6.5 earthquake (the 1971 San Fernando Valley earthquake). This record could plausibly be taken to represent a larger magnitude earthquake, in particular because it included the largest horizontal acceleration recorded up to that time, about 1.2*g*. Nevertheless, the Board's handling of this issue is unsatisfactory. As the Commission's Office of Policy Evaluation put it:

> "It is not clear, however, from the Boards' records if the Pacoima Dam record in the frequency range of interest (1-10 Hz) represents a deviation from that expected for a 6.5 M earthquake. Most of the testimony on Pacoima Dam centered on a frequency range of little practical interest (*i.e.*, near 33 Hz) regarding excitation of structures important to safety. We found no supporting statement on the record which indicated that the Pacoima Dam record substantially exceeded that expected for a 6.5 M

> earthquake in the frequency range of 1-10 Hz. USGS Circular 672 (p. 7) indicated that in the frequency range of 1-10 Hz, the Pacoima Dam record closely resembled what one would expect for a 6.5 M earthquake."[5]

Which brings us to the final point, that on top of all this trimming, the Board permitted a further substantial reduction, more-or-less across the board, in the response spectrum.

"Tau Effect"

The "tau effect", defined by Dr. Nathan Newmark, the NRC staff consultant, is used to describe the filtering effect that large rigid foundations have on the motion imparted to the building's structure during an earthquake. Newmark's estimate of the effect was used to justify a reduction in the response spectrum for each of the important structures in the reanalysis of Diablo Canyon. Newmark's analysis for the reactor containment reduced the acceleration response spectrum by about 20 percent over the frequencies of interest.[6]

A reading of both the Appeal and Licensing Boards' decisions shows an almost total reliance on the opinions of Newmark to justify the tau effect. Newmark in turn apparently relied heavily on the work of Yamahara. Yamahara's work dealt largely with an odd-shaped building quite unlike any of the structures at the Diablo Canyon plant and with earthquakes well below the magnitudes considered at the Diablo Canyon site. Neither of these discrepancies are explained in either Board decision. The Licensing Board's justification sounds almost mystical: "There is ample evidence of the excellent performance of large building foundations in earthquakes. Tau is a manifestation of this."[7] The Appeal Board responded to criticism of Dr. Newmark by stating: "Simply in light of his repeated references to Dr. Yamahara's work, only a very crabbed reading of Dr. Newmark's testimony could assume that he did not appreciate tau in all its ramifications."[8] What seems less clear is whether either Board had any idea what it was talking about.

That there is some effect of this kind is plausible, even likely; that the effect is as large as claimed by the applicant and staff is merely conjecture. Here is the way the Commission's Office of Policy Evaluation describes the situation:

> "Based on the record, it appears that a phenomenon exists which at times limits the damage to structures in the near field during an earthquake. However, we have not been able to find an empirical or analytical approach

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[5] Memorandum to the Commissioners from Forrest Remick, Subject: Diablo Canyon Design, dated November 12, 1981 with enclosure.

[6] ALAB-644, p. 963, footnote 266.

[7] In the Matter of *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 495 (1979).

[8] ALAB-644, p. 968.

> which provides justification as to why the tau effect should be calculated in one specific manner over another. Analyzed or existing data are so sparse that the actual reason for the observed effect may still not have been recognized within the engineering community. Except for the judgment of Drs. Blume and Newmark, there is no evidence to demonstrate an ability to predict tau effects over a range of earthquake magnitudes, structural configurations, and site conditions."[9]

The fact is that the tau effect has not been used in any other nuclear plant analysis. To our knowledge, it has not been used in the design of any other large building.

Comparison of Response Spectra

With the changes and adjustments permitted by the Board it turns out that the post-Hosgri seismic response spectrum does not in all respects represent a more severe seismic standard than the one used before the discovery of the Hosgri fault. As the accompanying diagram illustrates, in the frequency range between 5 and 10 hertz (cycles per second), a range of particular interest in the analysis of the containment building surrounding the reactor, the two response spectra are quite close. (See Fig. 4-23.) For part of this range, in fact, the old spectrum shows a *higher* response. In other words, for that part of the range the original design conditions were *more* demanding than the new ones imposed after the discovery of the Hosgri fault. This new spectrum is the basis of the engineering reanalysis and ultimately determined the extent to which the containment was to be modified. Not surprisingly, in view of the above, only minor changes were required in this area.

Precedential Significance

The Commission decision not to take review, in effect, places the Commission's stamp of approval on the Appeal Board's decision. The Board's reasoning on the "tau effect", for example, may be cited in future cases when an applicant or licensee would otherwise have difficulty in complying with our regulations. Or the tau effect could be used to compensate for deficiencies discovered in the design of completed plants. This would be a significant weakening of past agency practice.

Altogether, we cannot escape the impression that the Commission is declining review not because the opinion is essentially sound, but because it is unsound and the prospect of reviewing it is so unsettling.

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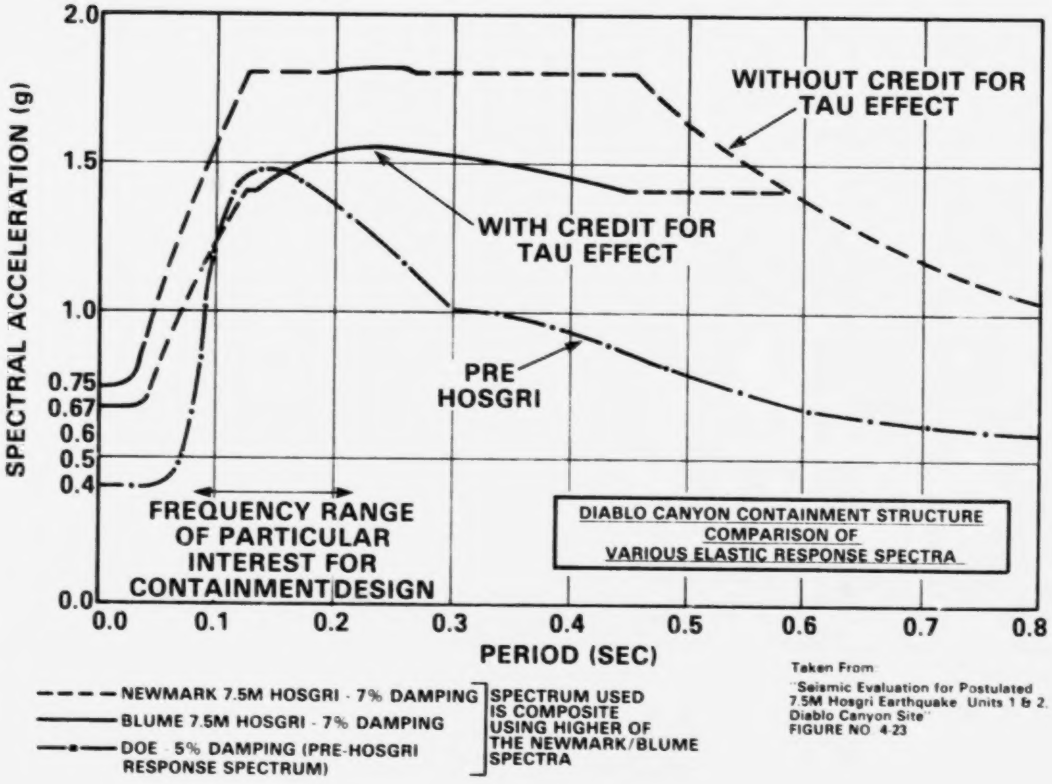
[9] Memorandum to the Commissioners from Forrest Remick, Subject: Diablo Canyon Design, dated November 12, 1981 with enclosure.



Taken From:
"Seismic Evaluation for Postulated
7.5M Hosgri Earthquake Units 1 & 2,
Diablo Canyon Site"
FIGURE NO. 4-23

OPINION OF COMMISSIONER AHEARNE ON COMMISSION REVIEW OF ALAB-644 (DIABLO CANYON SEISMIC PROCEEDING)

Commissioners Gilinsky and Bradford are releasing their recently written opinion on Commission review of this case, and describe the Commission as being unable to act on it. In the interest of a more complete picture I am also releasing my opinion, distributed to my fellow Commissioners three months ago.

The issue before the Commission was whether to take review of the Appeal Board decision (ALAB-644). After reviewing the decision, and the staff memoranda referred to by Commissioners Gilinsky and Bradford (the last being the Office of Policy Evaluation memorandum of November 5th), I sent out the following on December 9, 1981:

I would not take review and I do not believe the record needs to be reopened again. However, the reader should understand three points about not taking review:

(1) Not taking review of ALAB-644 does not in any way make a judgment concerning my position or the Commission's position with respect to the latest problems that have arisen at the Diablo Canyon plant, which led to the recent suspension of the low power license.

(2) Not taking review does not indicate that either I or the Commission believe issues regarding earthquake estimates and seismic design are unimportant. Because of their significance for Diablo Canyon, the current problems were considered sufficiently important to lead to license suspension.

(3) Not taking review is not synonymous with not examining.

To reach the conclusion on whether or not to take review, I did examine ALAB-644, the filings of all parties to the Commission on ALAB-644, and extensive staff reviews prepared by the Office of General Counsel and the Office of Policy Evaluation. I also reviewed USGS Circular 672 and USGS Open File Report 81-365. And, finally, I reviewed the Diablo Canyon SER Supplement No. 5.

I reached the following conclusions:

(1) There is no real question that magnitude 7.5 is large enough for the SSE for Diablo Canyon. There is some question that it may be too large. This question is not irrelevant, although M7.5 is accepted by the NRC staff, because many of the other arguments would diminish or disappear if one were to conclude, as did at least one Board-called witness, that a lower value earthquake would be more appropriate.

(2) There are several engineering issues addressed at length here for the first time in an NRC licensing case, making the decision quite important because it may establish precedents.

(3) There are several important issues relating to earthquake analysis.

In my opinion the only remaining significant engineering issue is what modification is appropriate in predicting a building's response to earthquakes because the building is a large rigid object. Some effect is plausible. The Board used an analogy to waves affecting a large boat differently than a string of small boats. Probably there are two effects involved:

(1) When the wavelength of a signal is small with respect to the size of an object which the signal perturbs, the resulting effect is modified from that when the wavelength is comparable to the object size. The resulting effect is an integration because the body does not respond to each individual wave. This is the basic phenomenon which the Board's analogy addresses. This effect has little significance here since the important wavelengths (for the 1-10 Hz range) are several hundred to several thousand feet, *i.e.*, comparable to or larger than the plant.

(2) When a large object is perturbed by many signals, arriving so that the accelerations vary both in magnitude and frequency, and perhaps in direction, the perturbing signals are incoherent. The resulting effect upon the building is a smoothing or an averaging of the various accelerations. Thus the early references in the literature by Yamahara, Ambraseys, and Scanlan refer to an average acceleration over the width of the foundation (SER No. 5, p. C-10). In SER No. 5 Newmark used the "travel" time across an "effective width" for the building by taking the appropriate distance to be the square root of the area. He then averaged the spectrum over this time to develop his tau reduction factor.

The effect is plausible and the records cited from the Hollywood Storage Building show the effect exists for the frequencies of interest. The two important questions are what magnitude is the effect and should the NRC allow for it in determining if our regulations are met.

If the technique is explainable, defensible, and reproducible, then I believe the NRC should allow for it. This technique appears to be sufficiently new and of limited applicability (only to large buildings with rigid foundations, such as nuclear plants) that it is not widely known. In addition, the data base is very limited. However, all earthquake analysis suffers from a limited data base, particularly analyses for very large earthquakes and in the near field (both representative of Diablo Canyon).

Those unfamiliar with seismic analysis may be surprised to see that the model used for the containment building, which contains the reactor and is a cylinder about 150 feet in diameter and 210 feet high, is a stick. The improved model uses weights distributed along the stick and examines the response of the weighted stick as the base shakes.

Dr. Newmark modified the input to this model by using a reduction to incorporate effects of building size at the higher frequencies. The approach is reasonable, all seismic data in this area are weak, and in the end the decision will be based upon engineering judgment. On balance, I support Dr. Newmark.

The third area, that of earthquake analysis, had many issues, but the possibly troubling one was whether the Pacoima Dam spectrum can be used to model the near field of an earthquake of magnitude 7.5. The earthquake registered at Pacoima Dam is estimated to be of magnitude 6.5-6.6. Dr. Newmark and others argued that the recording spot was on a rocky ridge which led to a much stronger signal than would be true of a less unique location. Dr. Newmark found the Pacoima Dam spectrum was well fit by a design spectrum appropriate to 0.75*g*, even though the measurement had a peak of 1.25*g*, the highest horizontal acceleration ever recorded. In SER No. 5 Dr. Newmark argued that in the near field of an earthquake the peak acceleration is not a reasonable basis to draw a design spectrum and it is more appropriate to match the overall spectrum.

Dr. Boore, *et al.*, in USGS Circular 672 adopted the 1.25*g* as appropriate to the maximum considered amplitude (they were making estimates for the Trans-Alaska Pipeline, which traverses regions of seismicity up to magnitude 8.5). Taking 1.25*g* as the maximum is consistent with the concept of magnitude saturation. In this particular case, they would be using 1.25*g* as the maximum appropriate to the largest earthquake being considered. The USGS reduced the measured spectrum to get an estimate of the spectrum for the magnitude 6.5 earthquake that triggered the Pacoima Dam record. They argued that Newmark and Hall (the basic reference for establishing response spectra) overestimates the response above 8 Hz. By removing the components above 9 Hz, the authors modified the Pacoima Dam record to get 0.9*g* as the appropriate maximum horizontal acceleration for a 6.5 magnitude earthquake. They then interpolate between 0.9*g* for M6.5 and 1.25*g* for M8.5 to get 1.1*g* for M7.5. Boore, *et al.*, rejected the use of the Pacoima Dam spectrum as anomalous because "[t]he authors are not aware of any investigations of possible side effects that *conclusively demonstrate* an anomalous amplification (greater than 25-50 percent) of recorded motion in the frequency range 1-10 Hertz." (Emphasis added) (p. 7, Circular 672)

Finally, Open File Report 81-365 by Joyner, *et al.*, proposes a new equation relating maximum horizontal acceleration and maximum horizontal velocity to earthquake magnitude and distance to the surface projection of the fault rupture, *d*. Unfortunately, like all available analyses, this report is based on data outside the near field of large earthquakes. The authors state: "The data set contains no recordings at rock sites with *d* less than 8 kilometers for earthquakes with M greater than 6.0, and caution is indicated in applying equations to rock sites at shorter distances for earthquakes of larger magnitude." (p. 15) Diablo Canyon is a rock site with *d* approximately 5.8 kilometers and, for design purposes, considers an M of 7.5, i.e., exactly the type of site outside the data set, for which the authors indicated caution should be used.

Once again, this area is one in which data are poor and experts disagree. Dr. Newmark's arguments are based on matching the significant portions of the spectrum, and rest on his professional judgment. The criticisms of accepting the

Newmark position are also judgments, as shown by the qualifications in the Boore and Joyner reports. I come down on the side of Dr. Newmark.

I agree that seismic design is a major issue relating to safe operation of the Diablo Canyon Nuclear Power Plant. However, I do not believe another full-scale adjudicatory review will add any additional light to the extensive reviews already done. Controversy in Diablo Canyon centers on the validity of judgments made by experts. An extensive record documents a wide range of expert opinion. So long as the Commission empowers Boards to sit for us to examine such disputed issues as the seismic design for Diablo Canyon, our decision to take review of a Board's decision should be based on whether there are any basic policy issues which must be addressed or any serious errors.

The basic question we have before us is whether an existing plant redesigned to some extent to withstand the predicted effects of a large earthquake from a nearby fault is adequately designed. We are not addressing what should be the design criteria for new plants nor are we addressing what should be the design criteria for this plant were it seeking a construction permit. The degree of conservatism that the Commission imposes must take into consideration a greater level of realistic estimates with regard to modifications or acceptance of an existing plant than for projects not yet begun.

With the help of the Commission staff, the Commission has examined the seismic issues. This examination was necessary if we were to make an informed assessment. I agree in general with the Appeal Board decision and I have not identified any serious errors. Therefore, I do not believe the Commission should take review.

SEPARATE VIEW OF COMMISSIONER ROBERTS

I vote against review of ALAB-644 by the Commission based on my evaluation of the opinion and of the various analyses prepared to assist the Commission in its decision by the Office of General Counsel, the Office of Policy Evaluation, and by seismic consultants specially hired by the Commission for this task. All of the groups listed above recommended that the Commission not review ALAB-644. Under 10 CFR §2.786(b), the Commission may not review ALAB-644 simply because it is intrigued by the technical issues raised or because it thinks its understanding of the technical issues is more sophisticated than the Appeal Board's understanding. Similarly, Commission review is not to be undertaken simply to correct the factual record in the proceeding. Rather, Commission review should be undertaken when the Appeal Board has clearly erroneously decided factual issues or incorrectly decided important legal or policy issues. I do not believe this to be the case here.

I agree with Commissioner Ahearne's technical analyses of the issues raised in the opinion. Beyond that, I wish to respond to some of the misleading statements made in the dissent. First, with regard to the allegation that the length of time between issuance of ALAB-644 and issuance of this Order reveals that the Appeal Board's decision is unsatisfactory. I note that I voted not to review ALAB-644 on November 23, 1981, several weeks after receipt of OPE's last analysis of the opinion. Second, with regard to the acceptability of assuming a magnitude 7.5 earthquake on the Hosgri Fault, I note that the figure was described as "grossly conservative"[1] during the hearing and that, on appeal, even the Joint Intervenors agreed that this figure was "acceptably conservative."[2]

Third, with regard to the Appeal and Licensing Boards' reliance on the expert testimony of Dr. Nathan Newmark, I note that, at the time of his death, Dr. Newmark was considered the preeminent authority on seismic engineering and seismology in this country. The technical issues resolved by the Boards in this case were not simply fact questions whose answers were within the grasp of educated laymen. Rather, resolution of these issues required the engineering judgment of experts who had vast experience not only in the history of earthquakes and how earthquakes move but also in how an earthquake transmits energy to a building and how that building, in turn, responds. Dr. Newmark's great depth of experience in every facet of the required analysis is precisely why the Boards properly relied on his testimony.

Finally, with regard to the allegation that the Commission declined to review ALAB-644 because it believes the decision is unsound and because to reveal that would be "unsettling," I wish to state that not only is that not the basis for the Commission's decision but that the process undertaken to determine whether to review ALAB-644 revealed quite the contrary. The history of the Diablo Canyon proceeding reveals a willingness to examine and reexamine the design basis of this plant. Evidentiary hearings on the seismic issues in the Diablo Canyon operating license proceeding began in December of 1978.[3] In its decision of September, 1979, the Licensing Board found that the plant was adequately designed to withstand any earthquake that could reasonably be expected.[4] The Licensing Board found that the Staff's seismic review was the most extensive ever undertaken and that the Applicant's review was extraordinarily thorough.[5] On October 15, 1979, a large earthquake struck California's Imperial Valley, approximately

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[1] *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 480 (1979).

[2] *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-644, 13 NRC 903, 913 (1981).

[3] *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 458 (1979).

[4] *Id.* at 507.

[5] *Id.*

250 miles southeast of the Diablo Canyon site. The Appeal Board reopened the record and took evidence itself. At that trial, 17 expert witnesses appeared, including two ACRS consultants called by the Appeal Board.[6] Subsequent to the Appeal Board's decision, the Commission hired its own seismic consultants. This lengthy indepth checking and rechecking of the bases of the seismic design hardly reveals fear on the part of the Commission to scrutinize the numbers.

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[6] *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-644, 13 NRC 903, 912 (1981).

Cite as 16 NRC 21 (1982) **CLI-82-13**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-289**
(Restart)

METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island, Unit 1) **July 16, 1982**

The Commission denies a motion by the licensee asking the Commission to decide expeditiously whether (1) it intends to prepare a supplemental environmental impact statement (SEIS) on psychological health effects associated with the operation of this facility in accordance with the decision in *PANE* v. *NRC*, No. 81-1131 (D.C. Cir., May 14, 1982), and if so, (2) to proceed expeditiously with its preparation and circulation, and (3) to decide that no hearing would be permitted on the SEIS. The Commission determines that it does not at present have enough information to decide whether the terms of the court's decision require the preparation of an SEIS.

ORDER

On May 24, 1982, the licensee, Metropolitan Edison Company, filed a "Motion with Respect to Psychological Health Issue" with the Commission, asking that the Commission decide expeditiously whether, in accordance with the decision of the D.C. Circuit Court of Appeals in *PANE* v. *NRC*, No. 81-1131 (May 14, 1982), it intended to prepare a supplemental environmental impact statement on psychological health effects associated with the operation of Three Mile Island Unit 1. The licensee further asked the Commission, if its determination of this question was that an SEIS would be prepared, to proceed expeditiously with its preparation and circulation, and to decide that no hearing would be permitted on the SEIS. The licensee stated that the Commission should take these actions without prejudice to its pursuit of appellate review of the D.C. Circuit's decision.

Responses to the licensee's motion were filed by PANE on June 3 and by the staff on June 10, 1982. Briefly, PANE urges the Commission to decide to prepare an SEIS and to hold that the SEIS must be considered in an adjudicatory hearing. The staff takes the position that the staff is not now in possession of enough information on the psychological health of residents in the TMI area to make a determination whether to recommend to the Commission that an SEIS be prepared. Efforts to collect such information are in progress at this time. The staff urges that such questions as the right to a hearing if an SEIS is prepared, and the need for and appropriateness of exemptions from the Commission's regulations after the determination whether to prepare an SEIS is made, need not and should not be addressed at this time. Rather, the staff recommends that the Commission defer a decision on these questions until the staff is in a position to report to it on the status of psychological health of residents in the TMI vicinity.

We agree with the staff that the Commission does not at present have enough information to decide whether the terms of the court's decision in *PANE* v. *NRC* require preparation of an SEIS, and that it would be premature to decide what procedures should be followed if a decision is made at some future time that an SEIS should be prepared. Accordingly, the licensee's motion is DENIED.

For the reasons stated in his attached separate views, Commissioner Gilinsky dissents from this decision.

It is so ORDERED.*

For the Commission,

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 16th day of July, 1982.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I would grant GPU's request that the Commission decide as soon as possible whether a supplemental environmental impact statement regarding the psychological impacts of restarting TMI-1 is required. The Commission has, for more than six months, been aware that some sort of assessment of the psychological effects of restarting TMI-1 might have to be made. Indeed, the NRC staff has already spent over a quarter of a million dollars to obtain the advice of a wide array of psychologists and other experts. In these circumstances, it is either disingenuous or a confession of managerial failure for the Commission to say that it "does not at present have enough information" to determine whether the decision in *PANE* v. *NRC* requires preparation of a supplemental EIS. The Commission should, by any reasonable standard, be able to decide this question by the end of this summer.

The difficulty seems to be that the Commission is more interested in keeping *PANE* v. *NRC* a live controversy in order to justify Supreme Court review than in concluding the TMI-1 case. As matters presently stand, the Commission's refusal to act as soon as possible could postpone the decision on restarting TMI-1 for months, depending upon whether the Supreme Court takes review of this case and upon the outcome of any such review.[1] The Commission's willingness to risk such delay in order to seek the reversal of an extraordinarily narrow ruling of the Court of Appeals[2] is particularly ironic since one of the Commission's principal reasons for not admitting the psychological stress contention was the fear that hearing this contention might prolong the proceeding. It is as if the Commission remembers nothing.

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[1] Assuming that the other safety problems, such as the steam generator tube corrosion, which are not part of the adjudicatory proceeding will be resolved by then.

[2] Psychological stress contentions would need to be admitted in proceedings other than TMI-1 restart only where the impacts consist of "post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe," that is, only in hearings which deal with the continued operation of a facility which has already suffered an accident of a severity comparable to that of the TMI-2 accident. If the Commission feels threatened by such a possibility then the public really does have something to worry about.

This entire episode shows that nuclear fear-mongering is not restricted to the anti-nuclear side. The Court's narrow ruling, in effect that there are extreme circumstances in which public fear must be taken into account in the Commission's administrative proceedings, has been depicted as a death warrant for nuclear power, and more, if not reversed. It is nothing of the sort. What these critics, many of whom should know better, fail to face up to is that, because of the Atomic Energy Act's preemption of State authority, their unwillingness to consider any but strictly radiological effects would mean that if fifty percent of the population of Middletown were to suddenly drop dead from fear of the TMI-1 restart, not a single entity of the State or Federal Government below the level of the U.S. Congress could take that fact into account in deciding whether to restart Unit 1.

Cite as 16 NRC 24 (1982) CLI-82-14

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket Nos. 50-361-OL**
50-362-OL

SOUTHERN CALIFORNIA EDISON COMPANY
(San Onofre Nuclear Generating Station, Units 2 and 3) **July 16, 1982**

On the basis of its immediate effectiveness review pursuant to 10 CFR 2.764(f), the Commission concludes that resolution of the issues covered by the Licensing Board's decisions in this operating license proceeding (LBP-82-3, 15 NRC 61 (1982); LBP-82-39, 15 NRC 1163 (1982); LBP-82-46, 15 NRC 1531 (1982)) does not present the type of safety problem which would require a further stay of their effectiveness, and decides that these decisions may go into effect. The license authorized is made subject to the condition that for operation above 5% of rated power to continue beyond six months from the date of issuance of the full-power license, the offsite medical arrangements issue retained by the Licensing Board in LBP-82-39 must be resolved or further operation above 5% must be justified under 10 CFR 50.47(c)(1). The Commission explains that its decision does not authorize issuance of the requested full-power license for Units 2 and 3 of this facility and further that they will not be issued until the staff has briefed the Commission on other, uncontested, issues and the Commission has voted on whether to authorize the licenses.

ORDER

On January 11, 1982, the Atomic Safety and Licensing Board (Licensing Board) issued a partial initial decision for San Onofre Nuclear Generating Station, Units 2 and 3, which found that the seismic design of those units was adequate and authorized the issuance of operating licenses for operation up to 5% of rated power.[1] On May 14, 1982, the Licensing Board filed an initial decision dealing with the contested emergency planning issues and which, insofar as the contested issues are concerned, authorized the Director of Nuclear Reactor Regulation to issue the licenses to operate San Onofre 2 and 3 at full power subject to confirmation by the NRC staff that certain emergency preparedness matters have been completed and meet the requirements of 10 CFR 50.47. In addition, the Licensing Board retained jurisdiction over two issues: (1) the adequacy of the existing siren notification system in San Clemente, and (2) the adequacy of offsite medical arrangements for members of the public who may be injured in an accident. Following receipt and evaluation of comments on this matter the Licensing Board decided, in an order dated June 16, 1982, that information on the deficiencies of the existing siren notification system forwarded by the City of San Clemente and Intervenors Guard, *et al.* did not merit reopening the proceeding and that the existing public notification system provides reasonable assurance that adequate notice to the public will be accomplished. See 10 CFR 50.47(b)(5) and Appendix E, IV, Part D, 3. With this ruling, the Licensing Board terminated its jurisdiction over this matter.

In its May 14, 1982 decision the Licensing Board also found that Southern California Edison had not yet demonstrated the sufficiency of arrangements for medical services for members of the public. However, the Licensing Board decided that the deficiencies in such medical arrangements were not so significant to preclude full-power operation for a period not to exceed six months while remedial action is undertaken by Southern California Edison and reviewed by the Licensing Board. See 10 CFR 50.47(c)(1).

The Commission will conduct an immediate effectiveness type review of the Licensing Board's decision on this issue pursuant to 10 CFR 2.764(f). The Board's subsequent order will be effective pending the Commission's review. The Licensing Board is to give the Commission a report on the status of the offsite medical arrangements question within four months of the date of issuance of the full-power operating license.

The Commission has reviewed the Licensing Board's January 11, 1982 and May 14, 1982 decisions as well as the June 16 order pursuant to 10 CFR 2.764(f), and has concluded that the resolution of the issues covered by these decisions does not appear to present the type of safety problem which would require the effectiveness of these decisions to be further stayed. The Commission has therefore decided that these decisions may go into effect. This decision is without prejudice to the subsequent appellate review by the Appeal Board and the Commission. The license is subject to the condition that for operation above 5% of rated power to continue beyond six months from the date of issuance of the full-power license, the offsite medical arrangements issue must be resolved or further operation above 5% of rated power must be justified under 10 CFR 50.47(c)(1). Since the Licensing Board decisions deal only with matters in controversy before the Board, however, and not with uncontested issues which are considered separately by the staff and the Commission, this order does not authorize the issuance of the requested full power licenses. Such licenses will not be issued until the staff has briefed the Commission on the remaining issues and the Commission has voted on whether to authorize the licenses.

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[1] A license to load fuel and operate up to 5% of rated power for Unit 2 was issued February 16, 1982, No. NPF-10.

It is so ORDERED.*

For the Commission,

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 16th day of July, 1982.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

Cite as 16 NRC 27 (1982) **CLI-82-15**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matters of **Docket Nos. 50-247**
50-286

CONSOLIDATED EDISON COMPANY OF NEW YORK
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF NEW YORK
(Indian Point, Unit 3)

July 27, 1982

Upon consideration of a series of pleadings by licensees concerning the Commission's plan to conduct a discretionary hearing on the possible suspension of Units 2 and 3 of the Indian Point facility, the Commission denies: (1) an appeal by a licensee from the order of the Licensing Board (established at the direction of the Commission to determine, *inter alia*, the issues which the forthcoming hearing are to address) admitting certain intervenors to the hearing; (2) a petition by a licensee for directed certification of its request for stay or dismissal of the proceeding; and (3) a petition by the two licensees for directed certification of their charges that the Board exceeded or misapplied its jurisdiction in admitting contentions. The Commission, *inter alia*, provides further guidance on the admission of contentions and the formulation of issues for hearing, and remands the matter to the Board for expeditious reconsideration of its rulings on the admissibility of the contentions in light of the additional guidance.

RULES OF PRACTICE: INTERVENTION

There is nothing in 10 CFR 2.714 or the case law interpreting that rule which permits licensing boards to exclude certain groups from a licensing proceeding because of their opinions on nuclear power, either generally or as related to certain plants, or because of their conduct outside the proceeding.

NUCLEAR REGULATORY COMMISSION: SUPERVISORY AUTHORITY

The Commission has an inherent supervisory power over the conduct of its adjudicatory proceedings, including the authority to provide guidance on the admissibility of contentions before licensing boards. *See Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 516-17 (1977); *United States Energy Research and Development Administration* (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 75-76 (1976).

MEMORANDUM AND ORDER

I. BACKGROUND

In a petition dated September 17, 1979, the Union of Concerned Scientists (UCS) requested that the Commission revoke the Indian Point Unit 1 license and suspend operations at Indian Point Units 2 and 3. On February 11, 1980, the Director of Nuclear Reactor Regulation issued a decision pursuant to 10 CFR 2.206 granting in part and denying in part the petition. The Director granted that part of the petition calling for revocation of the license for Unit 1, and also required the licensees to implement certain interim measures in regard to Units 2 and 3. He denied that part of the petition requesting suspension of the licenses for these units.

On May 30, 1980, the Commission expressed its intent to conduct a discretionary proceeding in the vicinity of the Indian Point Units and initiated an informal proceeding "for the purpose of determining, on an expedited basis, the issues which the adjudicatory proceeding is to address, and the criteria to be used for the ultimate decision in that proceeding. *Consolidated Edison Co. of New York* (Indian Point, Unit 2) and *Power Authority of the State of New York* (Indian Point, Unit 3), Docket Nos. 50-247 and 50-286, unpublished order dated May 30, 1980, slip op. at 3 (emphasis added). On January 8, 1981, the Commission issued an Order which set forth the questions it wished addressed in this proceeding and the procedures to be followed.[1]

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[1] *Consolidated Edison Co. of New York, Inc.* (Indian Point, Unit 2) and the *Power Authority of the State of New York* (Indian Point, Unit 3), CLI-81-1, 13 NRC 1 (1981).

The questions posed by the Commission in its January 8, 1981 order were:

1. What risk may be posed by serious accidents at Indian Point 2 and 3, including accidents not considered in the plant's design basis, pending and after any improvements described (2) and (4) below?
2. What improvements in the level of safety will result from measures required or referenced in the Director's Order to the licensee, dated February 11, 1980? (A contention by a party that one or more specific safety measures, in addition to those identified or referenced by the Director, should be required as a condition of operation of the facility or facilities, would be within the scope of this inquiry.)
3. What is the current status and degree of conformance with NRC/FEMA guidelines of state and local emergency planning within a 10-mile radius of the site and, of the extent that it is relevant to risks posed by the two plants, beyond a 10-mile radius? In this context, an effort should be made to establish what the minimum number of hours warning for an effective evacuation of a 10-mile quadrant at Indian Point would be. The FEMA position should be taken as a rebuttable presumption for this estimate.
4. What improvements in the level of emergency planning can be expected in the near future, and on what time schedule, and are there other specific offsite emergency procedures that are feasible and should be taken to protect the public?
5. Based on the foregoing, how do the risks posed by Indian Point Units 2 and 3 compare with the range of risks posed by other nuclear power plants licensed to operate by the Commission? (The Board should limit its inquiry to generic examination of the range of risks and not go into any site-specific examination other than for Indian Point itself, except to the extent raised by the Task Force.)
6. What would be the energy, environmental, economic or other consequences of a shutdown of Indian Point Unit 2 and/or Unit 3?
7. Does the Governor of the State of New York wish to express an official position with regard to the long-term operation of the units?

Id. 13 NRC at 7-8.

Questions 1 and 2 were modified and made more specific in the Commission's Order of September 18, 1981. These questions now read:

1. What risk may be posed by serious accidents at Indian Point 2 and 3, including accidents not considered in the plants' design basis, pending and after any improvements described in (2) and (4) below? Although not requiring the preparation of an Environmental Impact Statement, the Commission intends that the review with respect to this question be conducted consistent with the guidance provided the staff in the Statement of Interim Policy on "Nuclear Power Plant Accident Considerations under the National Environmental Policy Act of 1969:" 44 FR 40101 (June 13, 1980).[5]
2. What improvements in the level of safety will result from measures required or referenced in the Director's Order to the licensee, dated February 11, 1980? (A contention by a party that one or more specific safety measures, in addition to those identified or referenced by the Director, should be required as a condition of operation would be within the scope of this inquiry if, according to the Licensing Board, admission of the contention seems likely to be important to resolving whether (a) there exists a significant risk to public health and safety, notwithstanding the Director's measures, and (b) the additional proposed measures would result in a significant reduction in that risk.)

Id. 14 NRC at 612-613.

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[5] In particular, that policy statement indicates that:

Attention shall be given both to the probability of occurrences of releases and to the environmental consequences of such releases;

The reviews "shall include a reasoned consideration of the environmental risks (impacts) attributable to accidents at the particular facility or facilities. . . .";

"Approximately equal attention should be given to the probability of occurrence of releases and to the probability of occurrence of the environmental consequences. . . ."; and

Such studies "will take into account significant site and plant-specific features. . . ."

Thus, a description of a release scenario must include a discussion of the probability of such a release for the specific Indian Point plants.

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In the January 8, 1981 Order, the Commission set out the purpose of the Special Proceeding by stating that its primary concern was "the extent to which the population around Indian Point affects the risk posed by Indian Point as compared to the spectrum of risk posed by other nuclear plants." *Id.*, 13 NRC at 6. Finally, on September 18, 1981, the Commission issued another Order in which it further clarified both the issues that it wished addressed and the procedures to be followed in the hearing. *Id.*, CLI-18-23, 14 NRC 610 (1981).

II. PASNY'S APPEALS[2]

A. General

In the order we issue today we address primarily a series of pleadings filed by the Power Authority of the State of New York (PASNY), licensee of Unit No. 3.[3] PASNY asks us by way of directed certification to stay or dismiss the evidentiary hearing, and to rule on whether the Licensing Board below has misconstrued the Commission's instructions in its admission of contentions. PASNY has also appealed pursuant to 10 CFR §2.714a the Licensing Board's rulings admitting UCS and several other intervenors into the evidentiary proceeding. For reasons to be outlined below, we rule as follows:

(1) PASNY's appeal of the Licensing Board's admission of intervenors is denied.
(2) PASNY's petition for directed certification of its request for stay or dismissal is denied.
(3) PASNY's petition for directed certification of its charges that the Licensing Board below has exceeded or misapplied its jurisdiction in admitting contentions is denied, because we provide the Board with further guidance on this matter.

B. Rulings on Admission of Intervenors

1. *Standing*

a. UCS

The Board ruled that UCS was entitled to intervene as a matter of right or, alternatively, as a matter of discretion. PASNY appeals this ruling pursuant to 10

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[2] We have received letters from PASNY and UCS/NYPIRG, both dated July 19, 1982, but we have not entertained either letter.

[3] In Part III we rule on a UCS/NYPIRG Motion for Reconsideration; in Part IV we rule on a request of the Village of Buchanan, N.Y.

CFR §2.714a, arguing that the Commission should reverse the Board and deny the UCS petition to intervene. In PASNY's view the Board should have granted intervention on neither ground. The NRC staff agrees with PASNY that UCS is not entitled to intervene as a matter of right, but unlike PASNY believes that discretionary intervention is warranted. Both the staff and PASNY, relying upon *Health Research Group* v. *Kennedy*, 82 F.R.D. 21 (D.D.C. 1979) (hereinafter *HRG*), urge the Commission to deny UCS intervention as a matter of right. According to the staff and PASNY, UCS lacks standing to intervene because it has "sponsors" rather than "members or their functional equivalents."

The Commission has not reviewed these arguments and thus does not reach a conclusion on the correctness of the Licensing Board's ruling on standing as a matter of right. The Commission does not have to reach this issue here. Under the circumstances of this case, the Commission agrees that discretionary intervention is warranted.

b. Rockland Citizens for Safe Energy (RCSE)

PASNY also appeals the Licensing Board's grant of RCSE's petition to intervene, arguing that RCSE failed to establish a nexus between itself and those it seeks to represent. PASNY advances this argument notwithstanding that RCSE provided the Licensing Board with evidence of two members living near the plant who authorized RCSE to represent their interests. We believe that the Board's ruling was correct.

c. Greater New York Council on Energy (GNYCE)

The Licensing Board granted the intervention petition of GNYCE in an Order of April 23, 1982. PASNY in a May 10, 1982 pleading incorporates by reference the standing arguments in its April 19, 1982 pleading. It appears to us that GNYCE is similarly situated to RCSE in that it provided evidence of an individual member near the plant who authorized GNYCE to represent him. That being so, we see no reason to disturb the Board's ruling on this ground.

2. Intervenors' Views, Purposes, and Conduct

PASNY argues, citing no legal authority whatsoever, that the views of certain intervenor groups on nuclear issues, as well as their conduct outside this proceeding, should preclude their participation in this proceeding. As the staff notes in its response to PASNY's argument, there is nothing in 10 CFR §2.714 or the caselaw interpreting that rule which permits licensing boards to exclude certain groups because of their opinions on nuclear power, either generally or as related to specific plants. Staff Response of May 4, 1982, at 18. Likewise, there is no Commission rule prescribing the conduct of any party (other than licensees or others subject to our regulatory jurisdiction) outside our proceedings. PASNY's argument here is without merit.

3. *The Ability of the Intervenor Groups to Represent Their Members Adequately*

PASNY argues that the Licensing Board erred in granting the intervention petitions of New York Public Interest Research Group (NYPIRG), Westchester People's Action Coalition (WESPAC), and Friends of the Earth (FOE) because (1) the interests these groups seek to protect are not germane to the purposes of each group, and (2) their members' interests are too diverse for adequate representation by these groups. In support of these arguments PASNY relies primarily upon *Hunt* v. *Washington State Apple Advertising Commission*, 432 U.S. 333 (1977), *Associated General Contractors* v. *Otter Tail Power Co.*, 611 F.2d 684 (8th Cir. 1979), and *HRG, supra*.

As for the first argument — that the interests that FOE, WESPAC and NYPIRG seek to protect are not germane to the purposes of each — we agree with the staff (Brief at 20-21) that the record in the proceeding gives ample indication that the purposes of these organizations are substantially related to the subject of this litigation. Thus we reject PASNY's argument on this ground.

PASNY's second argument is that the interests of FOE, WESPAC and NYPIRG members are so diverse as to preclude adequate representation. The case most heavily relied upon by PASNY, *Associated General Contractors, supra*, is of little relevance to the present case. In *Associated General Contractors*, the court held that where the financial interests of a group of contractors was so diverse that the outcome of pending litigation would benefit some and harm others, a single association could not purport to represent the interests of all the members of the group. PASNY appears to argue that an organization which has wide ranging interests may not represent the interests of *all members* of the group. PASNY's brief fails to demonstrate that the wide ranging interests it lists will result in such a circumstance.

4. *The Board's Denial of PASNY's Request for an Evidentiary Hearing on Preliminary Matters*

PASNY asserts that the Board failed to carry out its duty of ensuring a fair and impartial hearing by refusing PASNY's request to conduct an evidentiary hearing regarding the practices and membership policies of the intervenor groups. PASNY relies upon *Consumers Power Co.* (Midland Plant, Units 1 and 2), LBP-78-27, 8

NRC 275 (1978) in making this argument, arguing that it has *bona fide* doubts regarding UCS membership and "Intervenor's scaremongering." As we have already disposed of PASNY's arguments as to conduct outside NRC proceedings and to UCS standing, we see no need for an evidentiary hearing on these matters. Indeed, such a hearing would no doubt detract from the possibility of an expeditious resolution of the questions we have asked of the Board.

For all of the above reasons, we see no reason to disturb the Licensing Board's rulings with regard to its grant of the petitions to intervene.

C. Stay or Dismissal

PASNY on April 22, 1982 asked us to exercise our discretion to take review pursuant to 10 CFR §2.718(i) of a March 29, 1982 Licensing Board order denying a PASNY motion for stay or dismissal of this proceeding. "Licensees' Motion for Directed Certification of Motion for a Stay of Commission's Orders of January 8, 1981 and September 18, 1981 or for Dismissal of this Proceeding or, In the Alternative, for Certification to the Commission" (hereinafter "Motion").

The essence of PASNY's motion for stay or dismissal of the proceeding appears to be its long-held position that the special proceeding should never have been instituted in the first place, and that it should be terminated as soon as possible. As the Licensing Board recognized, this argument and the principal supporting arguments have been articulated before, and we have rejected them before. Since the Commission has directed the institution of the proceeding, and has rejected requests that the proceeding be terminated, PASNY's assertion that the Licensing Board erred in refusing to stay or dismiss the proceeding (a course of action which, if adopted, would have constituted flagrant disregard of the Commission's directions to the Board) borders on the frivolous. We believe that at this point the interests of all concerned would best be served by the expeditious conduct of the proceeding.

D. Rulings on Contentions

On May 10, 1982 PASNY and Consolidated Edison (the latter was not a party to the other PASNY requests described above) asked us to review pursuant to 10 CFR §2.718(i) a Board order of April 23, 1982 ruling on contentions to be litigated in the adjudicatory proceeding. "Licensees' Petition for Directed Certification Pursuant to 10 CFR §2.718(i) and for Waiver of 10 CFR §9.103" (hereinafter "Petition"). The NRC staff supports licensees' petition ("NRC Staff Response to Support of [sic] Licensees' Request for Certification and for Waiver of 10 CFR §9.103," dated June 1, 1982), and UCS/NYPIRG oppose the petition ("UCS/NYPIRG Opposition to Licensees' Petition for Directed Certification of Issues

Arising from the Atomic Safety and Licensing Board's Order of April 23, 1982," dated May 25, 1982). We have an inherent supervisory power over the conduct of adjudicatory proceedings, including the authority to provide guidance on the admissibility of contentions before licensing boards. *See Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 516-17 (1977); *United States Energy Research and Development Administration* (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 75-76 (1976). In addition, because this is a special proceeding being held at the Commission's direction, we have an added responsibility to insure that our policies are clearly understood. The filings before us and, more importantly, our own review of the Board's opinion, convince us that exercise of our supervisory authority is warranted in this instance. In particular, we believe that guidance is needed on admissibility of issues, applicability of 10 CFR §2.758, and treatment of accident probability and consequences in testimony.

1. Admissibility of Issues

In our September 18, 1981 Order (CLI-81-23, 14 NRC 610), we provided guidance to the Board and the parties regarding admissibility of issues in the special proceeding and the application of 10 CFR §2.714. We stated that the Board would not be bound by 10 CFR §2.714 so that it could be "empowered only to accept and formulate, after consultation with the parties, those contentions which seem likely to be important to resolving the Commission's questions on pages 9-10, and thereby to assure that the proceeding remains clearly focused on the issues set forth in this Order." It has become clear to us that our instructions are not being applied by the Licensing Board. Our intent was not that the requirements of 10 CFR §2.714 be dispensed with or to encourage contentions challenging the Commission's regulations, but that *additional* requirements be applied to admission of contentions to assure a focused proceeding. In particular, we had in mind that the Board would, first, assure itself that proffered contentions included a statement of bases and that both the contentions and bases were stated with reasonable specificity, and second, further screen out those contentions which, while complying with §2.714, did not seem likely to be important in answering our questions. In this latter regard, we had in mind that the Board would itself redraft the contentions, screening out those issues which, in its judgment, would not contribute materially to the resolution of the Commission questions in light of the stated purpose of the proceeding, *i.e.*, the extent to which nearby population affects the risk posed by Indian Point as compared to the spectrum of risks posed by other nuclear power plants. In light of this purpose, the Board is expected to screen out those issues which, in its judgment, would make only a minor contribution to the Commission's goal, incommensurate with the time and resources required to address them.

Moreover, we intended some special considerations regarding admission of contentions under Question 2, which asks whether safety measures, in addition to those identified or referenced in the Director's February 11, 1980 Order, should be required. In addition to assuring compliance with 10 CFR §2.714 before admitting such contentions, the Board must make a threshold finding for each such contention whether "(a) there exists a significant risk to public health and safety, notwithstanding the Director's measures, and (b) the additional proposed measures would result in a significant reduction in that risk." This finding would be based on written material provided by the sponsor of the proposed measure.

2. *Applicability of 10 CFR §2.758*

In our September 18, 1981 Order, we did not address specifically the application of 10 CFR §2.758 which generally precludes litigation of rule challenges in adjudications. In its April 23, 1982 Order, however, the Licensing Board indicated that 10 CFR §2.758 would not apply to contentions related to the Commission's questions. The Licensing Board based this conclusion on footnote 4 of the Commission's September 18, 1981 Order. Order of April 23, 1982 at 904, note 2; Memorandum (To Clarify the Record) of April 27, 1982, at 2. The Licensing Board erred in its interpretation of this footnote and thus in its ruling on the applicability of Section 2.758 to the contentions in this proceeding. In light of the fact that application of Section 2.758 to this proceeding will help keep the proceeding focused on the Commission's questions, the Commission has decided to provide guidance.

We agree with the staff's formulation: "where the Commission intended that certain of its regulations be subject to challenge, it explicitly indicated this intent by framing questions which challenge the regulations." Staff Response of June 1, 1982, at 20. Under the Commission's questions, a challenge to the regulations should occur only to a limited extent, as described below.

The Commission expected that risk assessments submitted by parties in response to Question 1 might include elements not required by or addressed in the regulations since an assessment of risk is only indirectly related to the regulations. Thus, for example, an analysis prepared by a party might take into account protective actions not required by the NRC.

Question 2, to the extent the two-pronged test is met, permits contentions which argue for safety measures in addition to those presently required under the regulations.

Question 3 deals with compliance with Commission emergency planning regulations and supplemental NRC/FEMA emergency planning guidance. The question starts with an explicit reference to "the status and degree of conformance with NRC/FEMA guidelines." The Commission expected primarily a description of plans and capabilities in response to this question, and did not contemplate a challenge to the Commission's regulations.

The Commission's regulations advise that,

> generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. 10 CFR §50.47(c)(2).

The Commission intended to address the plume exposure pathway EPZ in Question 3. That EPZ is to be about 10 miles. However, the exact size and configuration can be affected by local conditions. Under Question 3 the Board was to address whether the high population density posed by the two plants is such a local condition. *Cf.* 10 CFR Part 50, Appendix E, note 2.

Question 4 has two parts. First, the question asks what improvements in emergency planning can be expected in the near future and on what time schedule. In response to this part the Commission expected a description of plans and capabilities of the licensee and state and local governments. The second part deals with other "specific offsite emergency procedures that are feasible and should be taken to protect the public." Here we did have in mind the possibility that additional emergency planning measures, not required by NRC or FEMA, could be raised for Indian Point as prudent risk-reduction measures in light of the risk posed by Indian Point as opposed to the spectrum of risks posed by other nuclear plants. In this sense a "challenge" to NRC emergency planning regulations, as applied to Indian Point, was contemplated. However, parties must first provide a sound basis for this further exploration. This element is missing from the Board's orders.

Since Question 5 is "[b]ased on the foregoing," it does not provide an independent basis for a challenge to the regulations. Question 6 is once again descriptive, and Question 7 does not relate to the parties and the formulation of contentions.

3. *Treatment of Accident Probability and Consequences in Testimony*

In our September 8, 1981 Order we stated that "a description of a release scenario must include a discussion of the probability of such a release for the specific Indian Point plants." This direction (and the Commission discussions which the Board has used) made clear that this particular instruction was to govern the preparation and filing of parties' testimony. The Board has not so required, in direct contradiction to the Commission's direction. Any testimony on accident consequences for Indian Point must include a discussion of the probability of the accidents leading to the proposed consequences. This discussion must be sufficient to convince the Board that the testimony addresses accidents that substantially contribute to overall risk. Testimony not meeting this test will not materially contribute to answers to the Commission's questions and should not be admitted.

We remand to the Board for expeditious reconsideration of its rulings as to the admissibility of all of the contentions admitted to the Special Proceeding. Additionally, we expect the Board to reformulate the contentions in accordance with this guidance. That includes the rejection of contentions previously admitted which do not fall within the scope of this proceeding as defined by the Commission.

III. UCS/NYPIRG PETITION FOR RECONSIDERATION

In our January 8, 1981 Memorandum and Order we observed that a satisfactory emergency plan for Indian Point was not then in place. 13 NRC at 3. On June 7, 1982 we received a "UCS/NYPIRG Motion for Reconsideration of Commission Ruling Allowing Interim Operation and for Issuance of a Show Cause Order Against the Licensees Prior to Commencement of the Evidentiary Hearing on the Safety of the Indian Point Nuclear Power Plants" (Motion). UCS/NYPIRG argue in their motion that new evidence concerning emergency planning for Indian Point warrants reconsideration of our earlier decision to allow the plant to continue operation pending the issuance of recommendations by the Licensing Board conducting the investigatory proceeding and our decision on those recommendations. UCS/NYPIRG request us to initiate a proceeding pursuant to 10 CFR §2.202 for the licensees to show cause why we should not revoke their licenses for failure to comply with our emergency planning rules.

If the UCS/NPIRG argument is a general challenge to emergency planning, then it should be referred to the staff to be dealt with pursuant to 10 CFR 2.206. If the issues are specifically tied to high population, then they should be cast in a form addressing the specific questions of the Commission Order.

IV. REQUEST BY THE VILLAGE OF BUCHANAN AS TO LOCATION OF HEARING

The Village of Buchanan, N.Y., on June 18, 1982 filed an "Emergency Petition for Directed Certification . . ." which asked us to order the Board to conduct its hearings inside the 10-mile EPZ. Licensing Boards have broad discretion to regulate the course of proceedings. *See* 10 CFR §2.718(e). We hesitate to overrule a board on a question left to its discretion unless there has been an abuse of its power. *See, e.g., Long Island Lighting Co.* (Shoreham Nuclear Power Station), ALAB-39, 4 AEC 727 (1971). As we do not believe that the board has abused its discretion in conducting the hearing eight miles outside the 10-mile EPZ, we deny the request.

The separate views of Chairman Palladino and Commissioners Gilinsky, Ahearne, and Asselstine are attached.

It is so ORDERED.[4]

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 27th day of July, 1982.

SEPARATE STATEMENT BY CHAIRMAN PALLADINO

I disagree with Commissioner Asselstine that the Commission's decision constitutes "an unnecessary, unwarranted and inappropriate interference . . . in the Board's conduct of this proceeding."

At least four Commissioners share a concern about the focus of the proceeding, and believe that changes are necessary.

I believe the Board will benefit from having a clear directive, rather than a more hortatory message, to reexamine the contentions already admitted. In the case of the two-pronged test for Question 2, I believe the reformulation is necessary if testimony is to be appropriately limited.

I also differ in that I do not agree the present guidance "goes beyond a fair reading" of our previous guidance (*i.e.*, I do not believe we have placed new restrictions on the Board). Our prior orders sought to have the Board concentrate on the significant, and the burden of the guidance in our decision today is to that end.

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[4] Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his partial approval of this Order. Had Commissioner Gilinsky been present, he would have affirmed his prior vote.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I am in general agreement with the views expressed by Commissioner Asselstine regarding the admission of contentions to this proceeding.

ADDITIONAL VIEWS OF COMMISSIONER AHEARNE

Commissioner Ahearne notes that the Commission majority supporting this order consists of those members who drafted, negotiated, discussed and supported the Commission order that provided the final Commission guidance to the Board. Commissioner Asselstine was not a member of the Commission during this period.

SEPARATE OPINION OF COMMISSIONER ASSELSTINE, CONCURRING IN PART AND DISSENTING IN PART

Summary

I concur in sections I, II A, B and C, III and IV of the order issued by the Commission majority. However, for the reasons set forth in greater detail below, I strongly disagree with section II D of the Commission order — that portion of the order addressing the majority's rulings on contentions.

In my judgment, this portion of the majority's decision constitutes an unnecessary, unwarranted and inappropriate interference by the Commission in the Board's conduct of this proceeding. Although I have concerns regarding the lack of specificity in some of the contentions admitted by the Board, and although I agree with the majority that certain of these contentions *on their face* do not appear to adhere fully to the guidance provided by the Commission in its previous orders in this proceeding, I believe there are far preferable alternatives to the approach adopted by the majority to assure that this proceeding remains focused on the issues framed by the Commission.

In other instances, I believe that section II D of the majority order imposes *new* restrictions on the admission of contentions in this proceeding that go far beyond a fair reading of the guidance contained in the Commission's previous orders. These new restrictions, coming more than ten months after the Commission's last directions to the Board, some three months after the Board's order formulating contentions and more than a month after the start of the evidentiary hearing itself, are very likely, in my judgment, to lead to substantial disruption and delay in this proceeding. Moreover, I believe that the lack of flexibility in the restrictions on the admission of contentions adopted by the majority may be incompatible with the investigatory nature of this special proceeding and may seriously limit the Board's ability to compile the information needed to address fully the issues specified in the Commission's previous orders in this proceeding. Finally, the new restrictions on the admissibility of contentions adopted by the majority will be perceived by the public — and in at least some instances, I believe, correctly so — as an effort by the Commission to change the rules of the proceeding in mid-stream in order to deny members of the public the opportunity to raise issues that were permissible under the Commission's previous orders and that have already been accepted by the Board. This perception cannot help but undermine public confidence in the thoroughness and objectivity of this proceeding, in the fundamental fairness of the Commission's adjudicatory proceedings in general, and in the safety of the facilities that are the subject of this investigatory proceeding.

For these reasons, I cannot agree to the majority's rulings on contentions in this order.

Discussion

With respect to the first question posed by the Commission, as modified by the Commission's September 18, 1981, order (CLI-81-23), the majority concludes that the Board has not followed the Commission's direction to consider accident probability as well as consequences. To address this concern, the majority directs the Board to require, as part of any testimony on accident consequences for Indian Point, a discussion of the probability of the accidents leading to the proposed consequences.

I agree that the Commission's September 18, 1981, order requires the Board, as part of its consideration of Question 1, to consider the probability as well as the consequences of release scenarios for the Indian Point plant. I believe that the Commission expected the Board to answer this element of the Commission's question based upon written and oral testimony and the Board's expert judgment. I also believe the Board's inherent supervisory authority over the conduct of the proceeding is sufficient to assure an adequate record on this aspect of the Commission's inquiry.

With respect to the second question posed by the Commission, as modified by the Commission's September 18, 1981, order, the majority requires that before admitting contentions addressing this question, the Board must make a threshold finding for each such contention, based upon written material submitted by the proponent of the contention, that "(a) there exists a significant risk to public health and safety, notwithstanding the Director's measures and (b) the additional proposed measures would result in a significant reduction in that risk."

I agree that the Commission's previous order required the application of this two-pronged test in considering contentions addressed to the Commission's second question, and that the two contentions addressing Question 2 that were admitted by the Board's April 23, 1982, order do not on their face demonstrate application of the two-pronged test. However, I do not believe that it is necessary to require an evidentiary showing of compliance with the two-part test prior to the admission of contentions at this stage of the proceeding, *after* contentions have been admitted by the Board and *after* the hearing has begun. Rather, I believe that the Board has the inherent supervisory authority necessary to assure that both elements of the two-pronged test are addressed in testimony on the two admitted contentions relating to the second Commission question.

In addition, a number of the contentions admitted by the Board in its April 23, 1982, order are framed in very broad terms. I am concerned that the breadth of these issues may create difficulties for the parties in preparing and filing testimony and may lead to testimony that is overly general and conclusionary.

As is the case for my concerns regarding contentions related to the first and second Commission questions, discussed above, I believe that these concerns can be addressed by the use of the Board's inherent supervisory authority. In fact, the Board's April 23, 1982, order states the Board's intent to use this authority to ensure that the Commission's instructions to conduct a focused proceeding are carried out. For future hearing sessions, I believe the Board should adopt procedures that will enable the parties to more sharply focus on the issues at the evidentiary hearing. Such procedures would include reformulation and refinement of the contentions following discussion with the parties regarding their more specific concerns, use of summary disposition, and alteration of the sequence for filing of prepared testimony so that the proponent of a contention files first and others are given ample time to prepare written rebuttal testimony.

In my view, this authority, together with other existing authority of the Board, is sufficient to address each of these concerns regarding the contentions in this proceeding. I therefore would decline to exercise the Commission's supervisory power over the conduct of this proceeding. In particular, I strongly disagree with the *new* restrictions on the admissibility of contentions adopted by the majority.

The order issued by the majority imposes three new restrictions on the admissibility of contentions in this proceeding — restrictions that were not clearly specified in the Commission's previous orders in this proceeding. First, the majority requires that the Board apply 10 CFR section 2.714 at this late stage of the proceeding. Thus, the proponent of each contention will now be required to provide a statement of the bases for the contention in order for the contention to continue to be admitted. Second, the majority requires that the Board determine for each contention, prior to admitting the contention, whether the contention will contribute materially to the resolution of the Commission's questions and what time and resources will be required to address the contention. Third, the majority provides new, detailed directions to the Board on the extent to which the Board may accept contentions that include challenges to the Commission's regulations.

The majority itself acknowledges that this latter restriction was not addressed specifically in the Commission's previous orders in this proceeding. In particular, the majority's restrictions on permissible challenges to the Commission's regulations in contentions relating to the Commission's third question appear to represent a substantial narrowing of the scope of contentions that would otherwise be permissible under that question.

Taken together, these new restrictions on the admission of contentions constitute an unwarranted and unnecessary interference by the majority in the management of the proceeding. Particularly with respect to the directions regarding challenges to the Commission's regulations, the majority's restrictions go beyond a fair reading of the Commission's previous guidance in this proceeding and deny parties the opportunity to raise issues that would have been admissible under the Commission's previous orders. At a minimum, the majority's order will require, before this proceeding can go forward, the wholesale review of each of the contentions previously admitted by the Board and the submission of bases for each of these contentions. More than ten months have passed since the Commission's last directions to the Board on contentions in this proceeding. More than three months have passed since the Board issued its order establishing the contentions in this proceeding, and more than one month has passed since the commencement of evidentiary hearings. Testimony has been prepared by the parties, and in some cases has already been presented, based upon the contentions admitted by the Board. The imposition of the majority's new restrictions on the admission of contentions at this late date will likely lead to disruption and delay in the proceeding.

Moreover, the majority's new restrictions on the admissibility of contentions may well be inconsistent with the investigatory nature of this special proceeding. For example, regardless of the sufficiency of the bases for contentions in this proceeding, the questions raised by the Commission are to be answered. If in the Board's independent view the contentions serve to join issue on the Commission's questions, then the lack of bases for the contentions become of little importance. Inflexible restrictions on the admission of contentions such as those adopted by the majority may well serve to limit the Board's ability to obtain the information needed to address fully the questions raised by the Commission. In its April 23, 1982, order, the Board recognized both its responsibility to obtain the information needed to answer the Commission's questions and the Commission's instructions to conduct a proceeding focused on those questions. The Board, through its inherent supervisory powers, has the authority to carry out its responsibility and to assure a focused hearing, and is best able to make judgments on the formulation and admissibility of contentions consistent with those two objectives.

Finally, and perhaps most importantly, I believe that the majority's imposition of new restrictions on the admissibility of contentions at this late date will have unfortunate consequences for the public perception of our adjudicatory proceedings in general and of this proceeding in particular. Specifically, the majority's restrictions will be perceived by the public — and in at least some instances, I believe, correctly so — as an effort by the Commission to change the rules of this proceeding in mid-stream in order to deny members of the public the opportunity to raise issues that were permissible under the Commission's previous orders. This perception cannot help but undermine public confidence in the thoroughness and objectivity of this proceeding, in the fundamental fairness of the Commission's adjudicatory proceedings in general, and in the safety of the facilities that are the subject of this investigatory proceeding.

For these reasons, I cannot agree to the majority's rulings on contentions in this order. Instead, having mentioned my concerns regarding the need for greater specificity in the present formulation of some contentions and for attention to the Commission's previous guidance regarding Questions 1 and 2, I would rely on the Board, using its supervisory powers, to conduct a focused proceeding that will provide the information needed to answer the Commission's questions. I am confident that the Board would use these powers wisely to meet those dual objectives. I also believe that this approach would avoid the unfortunate consequences I perceive in the majority's approach.

Cite as 16 NRC 44 (1982) **CLI-82-16**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-293**
(EA-81-63)

BOSTON EDISON COMPANY
(Pilgrim Nuclear Power Station) **July 30, 1982**

The Commission denies a petition by the Attorney General of Massachusetts for a hearing and intervention on an order of the NRC Office of Inspection and Enforcement modifying the operating license for this facility, on the ground that the petition presents concerns outside the scope of the proceeding.

ATOMIC ENERGY ACT: HEARINGS (ENFORCEMENT ACTION)

Section 189a of the Atomic Energy Act does not provide a non-discretionary right to a hearing on all issues arguably related to an acknowledged enforcement problem without regard to the scope of the enforcement action actually proposed or taken by the Commission. In order to obtain leave to intervene in an NRC proceeding, a petitioner must demonstrate an interest affected by the licensing action, as required by 10 CFR 2.714. *BPI* v. *Atomic Energy Commission*, 502 F.2d 424 (D.C. Cir. 1974).

ENFORCEMENT ACTIONS: SCOPE OF PROCEEDINGS

The Commission may limit the issues in enforcement proceedings to whether the facts as stated in the order are true and whether the remedy selected is supported by those facts. *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, 441-42 (1980).

ORDER

On January 18, 1982, the Office of Inspection and Enforcement issued an Order modifying the operating license for the Pilgrim Nuclear Power Station, a Boston Edison Company (BECO) facility in Plymouth, Massachusetts. The order provides that "[c]ontinued operation of the Pilgrim facility requires significant changes in Boston Edison Company's control of licensed activities." It requires the Company to develop and implement "a comprehensive plan of action that will yield an independent appraisal of site and corporate management organizations and functions, recommendations for improvements in management controls and oversight, and a review of previous safety-related activities to evaluate compliance with NRC requirements." Order Modifying License Effective Immediately, Docket No. 50-293 (January 18, 1982) at 6, *printed at* 47 *Fed. Reg.* 4171 (January 28, 1982) (hereinafter, "Order").

On February 17, 1982, the Attorney General for the Commonwealth of Massachusetts filed a Petition with the Commission seeking to intervene in a proceeding for modification of the Pilgrim operating license. In support of his petition, the Attorney General alleges a non-discretionary right to intervene in the proceeding, pursuant to section 189a of the Atomic Energy Act, prior to any further NRC action with respect to the January 18, 1982 order. For the reasons set forth below, we deny his request.

As a matter of law, section 189a does not provide a non-discretionary right to a hearing on all issues arguably related to an acknowledged enforcement problem without regard to the scope of the enforcement action actually proposed or taken. In order to be granted leave to intervene, one must demonstrate an interest affected by the action, as required by 10 CFR 2.714. *BPI* v. *Atomic Energy Commission*, 502 F.2d 424 (D.C. Cir. 1974). The scope of the action initiated by the Commission may be limited and defined by the Commission. The Commission may limit the issues in enforcement proceedings to whether the facts as stated in the order are true and whether the remedy selected is supported by those facts. *Public Service Company of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, at 441-42 (1980).* The order in this case limits the scope of a proceeding in this way. It states that in a hearing the issue would be whether, on the basis of matters set forth in the Order, the Order should be sustained. Order at 9-10.

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*In that order the Commission stated the legal and policy considerations in support of this view, 11 NRC 438, 441-42 [footnotes omitted]:

> The reasons for this are simple. We believe that public health and safety is best served by concentrating inspection and enforcement resources on actual field inspections and related

(Continued)

In this case, the Attorney General asserts four concerns with respect to the Order:

(1) Without participating in the review of BECO's proposed corrective actions, the public can have no assurance that continued operation of the facility will not jeopardize their health and safety. Petition at 3;

(2) If the NRC requires the wrong, or insufficient changes in BECO's management systems and controls, an existing threat to public health and safety will continue;

(3) If NRC fails to require timely management changes this threat will continue; and

(4) If BECO fails to properly implement necessary management changes this threat will continue indefinitely.

Attorney General's Brief at 5.

These concerns are beyond the scope of the proceeding. The Attorney General does not oppose the issuance of the Order nor does he raise in his petition or brief any suggestion that it is unsupported by the facts it sets forth. Indeed, far from disputing the facts set forth in the Order, the Attorney General recites them to show the need for NRC action. Attorney General's petition at 3. If anything, the Attorney General suggests that these facts not only support this Order but also support further NRC action. Consequently, the Attorney General is not entitled as of right to any formal hearing in the proceeding with respect to these concerns. Nor do we believe that, under the circumstances, a discretionary hearing should be held. *See Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 616 (1976). The NRC staff will give full and fair consideration to any of the Attorney General's expressed concerns regarding

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scientific and engineering work, as opposed to the conduct of legal proceedings. This consideration calls for a policy that encourages licensees to consent to, rather than contest, enforcement actions. Such a policy would be thwarted if licensees which consented to enforcement actions were routinely subjected to formal proceedings possibly leading to more severe or different enforcement actions. Rather than consent and risk a hearing on whether more drastic relief was called for, licensees would, to protect their own interests, call for a hearing on each enforcement order to ensure that the possibility of less severe action would also be considered. The end result would be a major diversion of agency resources from project inspections and engineering investigations to the conduct of hearings. In our view cases such as *Moog Industries* [v. FTC, 355 U.S. 411 (1958)], clearly permit an agency to adopt a policy which avoids such a result.

Finally, the NRC already provides a separate procedure, under 10 CFR 2.206, for any interested person to seek enforcement actions beyond those adopted. Furthermore, in appropriate cases enforcement orders may provide a broader scope, as has already been done in certain orders related to the Three Mile Island Nuclear Station. The order in this case, however, was limited to the issues noted above, and as such would not grant standing to parties seeking additional remedies.

future actions in this case, and we believe that this informal process will prove to be a satisfactory way of resolving those concerns. If for any reason the Attorney General believes his concerns have not received adequate attention or he desires more formal consideration of them, he may file a request for further enforcement action pursuant to 10 CFR 2.206. Should any Commission analysis or information in a 2.206 petition show that the NRC-ordered modification program has not been either sufficient to address the problems or properly responded to by the licensee, the licensee bears the risk of further action as appropriate. In this way, the Commission believes that the public health and safety has been properly and adequately protected by its actions.

The Attorney General's request for a hearing is therefore denied. Commissioner Gilinsky dissents and would grant the petition.**

It is so ORDERED.

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 30th day of July, 1982.

**Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present, he would have affirmed his prior vote.

Cite as 16 NRC 48 (1982) **CLI-82-17**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-322-OL**

LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1) **July 30, 1982**

In response to a request by counsel for the applicant, the Commission directs that applicant's and intervenor's counsel be given access to those portions of the Appeal Board's opinion in the *Diablo Canyon* operating license (physical security) proceeding (ALAB-653) (Restricted) dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders, subject to the prior deletion of any classified information contained therein and the execution of appropriate nondisclosure affidavits. In response to a further request by intervenor's counsel for access by intervenor's consultants and for access to the entire *Diablo Canyon* security file, the Commission: (1) refers the request for access by intervenor's consultants to the Licensing Board with a direction to authorize access only upon a showing of need; and (2) denies access to the other portions of the opinion and the underlying record in the absence of a showing of need for such access.

ORDER

By letter dated July 25, 1982, Anthony F. Earley, counsel for applicant Long Island Lighting Company, requested that he and one other member of his law firm, T. S. Ellis, III, be given access to certain portions of the Appeal Board's opinion in the Diablo Canyon physical security proceeding, *Pacific Gas & Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-653 (Restricted)

(1981), and the record supporting it. Specifically, Mr. Earley requested access to those portions of the opinion dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders.

By letter dated July 2, 1982, Herbert H. Brown, counsel for intervenor Suffolk County, agreed with Mr. Earley's request. Mr. Brown further requested that security experts for the parties be granted access, and that both the experts and counsel be granted access to the entire *Diablo Canyon* physical security file. Mr. Brown specifically requested that Michael S. Miller, an attorney, and Dr. Brian Jenkins and Marc Goldsmith, consultants, be granted access.

The Commission agrees that it would be senseless to litigate issues already decided by the Appeal Board without access to the Appeal Board's opinion. The Commission therefore directs that Mr. Earley, Mr. Ellis and Mr. Miller be given access to those portions of ALAB-653 dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of responders. This material is to be edited to delete any classified information contained therein and access is conditioned on these individuals signing new affidavits of non-disclosure applicable to Diablo Canyon physical security information and substantially similar to those used in the Diablo Canyon proceeding. The Commission denies the request for access to the entire opinion in the absence of any showing of need for access to other parts of the opinion. The Commission also denies the request for access to the underlying record as the Commission believes that the Appeal Board opinion itself will provide sufficient guidance.

Intervenor Suffolk County's request for access by its consultants is referred to the Licensing Board. Such access should be granted only if Suffolk County demonstrates the requisite need to know. 10 CFR 73.21(c)(vi). *See* 46 *Fed. Reg.* 51718, 51719-20 (October 22, 1981). PG&E is to be provided an opportunity to make a special appearance on the request if it so desires.

It is so ORDERED.*

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 30th day of July, 1982.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

Cite as 16 NRC 50 (1982) **CLI-82-18**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-255-SP**

CONSUMERS POWER COMPANY
(Palisades Nuclear Power Facility) **July 30, 1982**

The Commission vacates on grounds of mootness the Appeal Board's and the Licensing Board's earlier decisions (ALAB-670, 15 NRC 493 (1982); LBP-81-26, 14 NRC 247 (1981)) concerning the holding of a hearing on a confirmatory order by the Director of the Office of Inspection and Enforcement restricting licensed operator overtime work at Palisades.

RULES OF PRACTICE: MOOTNESS

Under established NRC practice, unreviewed judgments are vacated when their appellate review becomes unavailable because of mootness. *See, e.g., Boston Edison Company* (Pilgrim Nuclear Power Station, Unit 2), ALAB-656, 14 NRC 965 (1981); *Rochester Gas & Electric Corp.* (Sterling Power Project, Nuclear Unit No. 1), ALAB-596, 11 NRC 867 (1980).

MEMORANDUM AND ORDER

On March 9, 1981 the Director of the Office of Inspection and Enforcement issued a confirmatory order to improve the licensee's performance at the Palisades plant. 46 *Fed. Reg.* 17688 (March 19, 1981). That order, to which the licensee consented, in part restricted overtime for licensed operators at the Palisades Facility to a greater degree than the NRC's generally applicable limitations. The Utility Workers Union of America and the Michigan State Utility Workers Council (Union) requested a hearing on the overtime restrictions imposed by the order.

The Commission referred the Union's request for a hearing to the Atomic Safety and Licensing Board. Unpublished Order of May 29, 1981. On July 31, 1981 the Licensing Board denied the request for a hearing. The Licensing Board found that the Union lacked standing entitling it to a hearing as of right, that the Commission's referral order had precluded the Board from granting a discretionary hearing and that the criteria for a discretionary hearing had not been satisfied. *Consumers Power Company* (Palisades Nuclear Power Facility), LBP-81-26, 14 NRC 247 (1981).

The Appeal Board reversed the Licensing Board on March 31, 1982. The Appeal Board found that the Commission had not barred consideration of a discretionary hearing, and that the criteria for a discretionary hearing had been satisfied. *Consumers Power Company* (Palisades Nuclear Power Facility), ALAB-670, 15 NRC 493 (1982).

Subsequently, the NRC staff and the Union settled their disagreement over allowable overtime, and on May 11, 1982, the NRC staff and the Union filed a "Joint Motion to Terminate Proceeding." That motion stated that on April 21, 1982 the NRC Administrator of Region III had issued a "Partial Recission of Order" modifying the overtime restrictions in the March 9 Director's Order to comply with the normal Commission policy on overtime, and that the Union had withdrawn its request for a hearing. On May 28, 1982 the Licensing Board granted the motion to terminate the proceeding after finding that the settlement and "Partial Recission of Order" were fair and reasonable.

Thus, this proceeding is now moot. Under established NRC practice, unreviewed judgments are vacated when their appellate review becomes unavailable because of mootness. *See, e.g., Boston Edison Company* (Pilgrim Nuclear Power Station, Unit 2), ALAB-656, 14 NRC 965 (1981); *Rochester Gas and Electric Corporation* (Sterling Power Project, Nuclear Unit No. 1), ALAB-596, 11 NRC 867 (1980). *See also, e.g., A. L. Mechling Barge Lines, Inc.* v. *United States*, 368 U.S. 324 (1961); *United States* v. *Munsingwear, Inc.*, 340 U.S. 36 (1950). Accordingly, we hereby vacate both the Licensing Board decision, LBP-81-26, and Appeal Board decision, ALAB-670. These decisions also should not be used for guidance.

It is so ORDERED.*

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
the 30th day of July, 1982.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

Cite as 16 NRC 53 (1982) **CLI-82-19**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket Nos. 50-275-OL**
50-323-OL
(Physical Security)

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power
Plant, Units 1 and 2) **July 30, 1982**

In response to a motion by the representative of an interested state requesting that portions of ALAB-653 (Restricted) and his petition for review of that decision which do not contain protected information be made public, the Commission releases versions of both documents with all protected information deleted. The Commission determines that the meaning of "several" as used in the design basis threat of 10 CFR 73.1(a)(1) is safeguards information under Section 147 of the Atomic Energy Act.

ORDER

On October 13, 1981 Governor Brown filed a motion with the Commission requesting that those parts of ALAB-653 and his Petition for Review which do not contain "protected information" be made public. The Commission is hereby releasing a version of Governor Brown's Petition for Review and the following version of ALAB-653 with all protected information deleted. In this regard, the

Commission has determined that the meaning of "several" as used in the design basis threat of 10 CFR 73.1(a)(1) is safeguards information under Section 147 of the Atomic Energy Act.

It is so ORDERED.*

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 30th day of July, 1982.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

ALAB-653

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. W. Reed Johnson

In the Matter of

Docket Nos. 50-275-OL
50-323-OL

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

September 9, 1981

APPEARANCES

Messrs. **Bruce Norton** and **Arthur C. Gehr**, Phoenix, Arizona, and **Malcolm H. Furbush** and **Philip A. Crane, Jr.**, San Francisco, California, for the applicant, Pacific Gas and Electric Company.

Messrs. **Herbert H. Brown, Lawrence C. Lanpher** and **Christopher B. Hanback,** Washington, D.C., and **Byron S. Georgiou,** Sacramento, California, for Governor Edmund Brown, Jr. of the State of California.

Messrs. **Harry M. Willis** and **W. Andrew Baldwin,** San Francisco, California, for the intervenor, San Luis Obispo Mothers for Peace.

Messrs. **William J. Olmstead** and **Charles Barth and Mrs. Lucinda Low Swartz** for the Nuclear Regulatory Commission staff.

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DECISION

This decision contains our findings of fact and conclusions of law on the contested security plan issues in the Diablo Canyon operating license proceeding. As such, the decision necessarily contains numerous details of the facility security plan. Consequently, the decision, like the security plan and *in camera* hearing transcripts, must be treated as protected information. It may not be publicly disclosed. The decision will be made available to counsel for the Governor of California and intervenor San Luis Obispo Mothers for Peace who previously executed affidavits of non-disclosure. It will be placed in the secure facilities provided by the NRC staff and applicant for examination of protected information.

I. PROCEDURAL HISTORY

In ALAB-580[1] we overturned the Licensing Board's finding that the security plan for the applicant's two-unit Diablo Canyon nuclear facility complied with the Commission's regulations.[2] We did this after discovering that the security plan was not part of the hearing record below and ascertaining from the Licensing Board's response[3] to our inquiry[4] that it had never looked at the Diablo Canyon security plan. These circumstances, combined with the sparsity of the hearing record on the adequacy of the plan, led us to conclude that the Licensing Board's finding was "so much waste ink" because "[n]o conceivable good is served by making empty findings in the absence of essential evidence." 11 NRC at 230. We then vacated the security plan portion of the Board's partial initial decision and announced that we would consider the adequacy of the applicant's security plan *de novo*. 11 NRC at 231.

The San Luis Obispo Mothers for Peace (SLOMFP) was allowed to participate as an intervenor in accordance with the terms of ALAB-410[5] where, over two years before, we outlined the strictures for litigating the adequacy of applicant's security plan. Similarly, we permitted the Governor of the State of California to participate as the representative of an interested state.[6] After resolving all disputes over the scope and content of the affidavit of non-disclosure incorporated into our protective order,[7] we granted counsel for intervenor and Governor Brown (and their respective qualified expert witnesses) access to applicant's security plan.[8] The intervenor filed amended contentions and Governor Brown filed a statement of issues on which he wished to participate. We entertained objections to the intervenor's contentions and Governor Brown's statement of issues and recast those that we accepted — plus two matters raised *sua sponte* — into ten consolidated issues.[9] Upon completion of discovery,[10] all parties prefiled their direct testimony. We then overruled intervenor's objection to holding the security hearing on applicant's premises[11] and, beginning November 10, 1980, we held six days of *in camera* hearings at the applicant's headquarters in San Francisco, California. After the close of the hearing, all parties filed proposed findings of fact and conclusions of law.[12]

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[1] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-580, 11 NRC 227 (1980).

[2] See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 507 (1979).

[3] See Licensing Board memorandum dated February 11, 1980 (unpublished).

[4] See our memorandum of February 6, 1980 (unpublished).

[5] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-410, 5 NRC 1398, *review denied*, CLI-77-23, 6 NRC 455 (1977).

[6] See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-600, 12 NRC 3, 8 (1980).

II. REGULATORY SCHEME FOR PHYSICAL PROTECTION OF COMMERCIAL REACTORS

Section 73.55 of the Commission's regulations[13] sets forth the physical protection requirements for safeguarding commercial nuclear power reactors against "radiological sabotage." This term is defined as a deliberate act against a plant or plant component which could directly or indirectly endanger the public health and safety by exposure to radiation.[14] Rather than providing a blueprint for an entire security system, the Commission's regulations propound an overall general performance objective and a design basis threat which the physical protection system must be designed to meet. The regulations then address the component parts of a security system and prescribe more specific requirements for each system subpart. The flexibility of this regulatory scheme allows each applicant considerable latitude in designing a safeguards system to protect its nuclear power facility from radiological sabotage.

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[7] See First Prehearing Conference Order dated February 25, 1980, at 4-5 (unpublished); *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-592, 11 NRC 746, 748-49, *modified and remanded*, CLI-80-24, 11 NRC 775, *on remand*, ALAB-600, 12 NRC 3, 4-7 (1980); Third Prehearing Conference Order dated August 4, 1980 at 3-4 (unpublished).

[8] See ALAB-592, *supra*, 11 NRC at 751-756; ALAB-600, *supra*, 11 NRC at 9-13; Third Prehearing Conference Order dated August 4, 1980 at 4-6 (unpublished); Fourth Prehearing Conference Order dated August 8, 1980 at 2-4 (unpublished).

[9] See Order Ruling on Contentions dated September 18, 1980 (unpublished); see also Order dated November 4, 1980 (unpublished).

[10] See Order Ruling on Discovery Motions dated October 10, 1980 at 4-24 (unpublished); Order dated October 17, 1980 (2 pp., unpublished).

[11] See Order dated October 17, 1980 at 5-13 (13 pp., unpublished), *review denied*, Order of the Commission dated November 6, 1980 (unpublished).

[12] We subsequently ruled on a motion regarding compliance with the terms of our protective order. See Memorandum and Order dated December 30, 1980 (sealed and unpublished); *aff'd on review by Commission sua sponte*, Commission order dated February 20, 1980 (unpublished, with edited version of our December 30, 1980 memorandum and order attached).

[13] 10 CFR §73.55.

[14] 10 CFR §73.2(p). The off-site doses set forth in 10 CFR §100.11 are the Commission's reference values for determining radiation exposures in emergencies which endanger the public health and safety.

Section 73.55(a) mandates that a reactor security system be planned so as to protect against the "design basis threat of radiological sabotage." That malevolent threat is defined in Section 73.1(a)(1) as:

> (i) A determined violent external assault, attack by stealth, or deceptive actions, of several persons with the following attributes, assistance and equipment: (A) Well-trained (including military training and skills) and dedicated individuals, (B) inside assistance which may include a knowledgeable individual who attempts to participate in a passive role (*e.g.*, provide information), an active role (*e.g.*, facilitate entrance and exit, disable alarms and communications, participate in violent attack), or both, (C) suitable weapons, up to and including hand-held automatic weapons, equipped with silencers and having effective long-range accuracy, (D) hand-carried equipment, including incapacitating agents and explosives for use as tools of entry or for otherwise destroying reactor, facility, transporter, or container integrity or features of the safeguards system, and
>
> (ii) An internal threat of an insider, including an employee (in any position).

The general performance objective is also stated in Section 73.55(a) and requires that the reactor security system provide "high assurance that activities involving special nuclear material are not inimical to the common defense and security, and do not constitute an unreasonable risk to the public health and safety."[15] Although nowhere defined, the "high assurance" objective "is deemed to be comparable to the degree of assurance contemplated by the Commission in its safety review for protection against severe postulated accidents having potential consequences similar to the potential consequences from reactor sabotage."[16] Under the regulatory scheme, the general performance objective is generally satisfied once the detailed requirements for the various components of a security system set forth in Sections 73.55(b)-(h) are met. However, the regulations recognize that there may be special circumstances which lead the Commission to impose additional security measures so that a particular system meets the general performance objective. In addition, the regulations permit the use of security measures other than those precisely meeting the requirements of Sections 73.55(b)-(h) if such measures provide equivalent protection.[17]

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[15] The regulations define special nuclear material of low strategic significance to encompass power reactor fuel: "10,000 grams or more of uranium-235 contained in uranium enriched above natural but less than 10 percent in the U-235 isotope." 10 CFR §73.2(y).

[16] 44 *Fed. Reg.* 68184, 68185 (November 28, 1979).

The specific requirements for the six subparts of a security system are spelled out in Sections 73.55(b)-(g). Subsection (b) directs the licensee to establish a security organization — including armed guards who must be trained, equipped, qualified and annually requalified — and a management system which must develop, implement and enforce all necessary security procedures. Subsection (c) dictates that the safeguards system incorporate various physical barriers, zones and lighting requirements to aid in detecting, delaying and resisting unauthorized entry into the facility. Subsection (d) spells out the various requirements for controlling access to the facility and for identifying and evaluating personnel and physical items moving into the facility as well as moving from one area to another within the facility.

The requirements for detecting unauthorized intrusions into the facility are outlined in subsection (e). Among other things, this part requires that all alarm equipment be self checking and tamper indicating and that alarms annunciate in two continuously manned alarm stations indicating the type and location of the alarm. The communication requirements of subsection (f) direct that all facility guards have the capability of continuous communication with both alarm stations and that the alarm stations have conventional telephone as well as backup emergency powered two-way radio or microwave voice communication with local law enforcement authorities. Subsection (g) establishes the testing and maintenance schedules for the various system components and mandates an annual independent security audit of the safeguards system.

Finally, subsection (h) details certain responsibilities of the security organization: to execute a contingency plan; to establish a liaison with local law enforcement agencies; to provide that ten armed and trained security personnel shall be available at all times to respond to safeguard incidents unless the Commission determines otherwise (but that number may never be reduced to less than 5 guards); and, to assure that in the event of a security emergency, the threat be effectively assessed and then neutralized by the deployment of armed response personnel between vital areas and the intruders.

III. THE DESIGN BASIS THREAT

A. Size of the External Assault Force

Because a number of the contested issues before us challenge the adequacy of various aspects of the applicant's security plan to protect against the design basis threat of Section 73.1(a)(1), many of our findings are to some extent dependent on the numerical size of the external malevolent force characterized in the design basis threat by the words "several persons."[18] We must initially confront this legal question, which the parties briefed fully, before resolving the contested issues.

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[17] 10 CFR §73.55(a). See 42 *Fed. Reg.* 10836 (February 24, 1977).

1. The parties disagree on how the word "several" should be construed. In essence, Governor Brown and SLOMFP contend that the Commission intended the word to be an indefinite term without any specific numerical limitation. They argue that their interpretation would permit site specific flexibility in designing reactor protection systems for the threats associated with each particular facility. They further argue that here the record establishes that the likely threat to Diablo Canyon is up to twelve attackers, a number which they believe is encompassed by the term "several." The staff and applicant, on the other hand, assert that the Commission intended the "several persons" of the design basis threat uniformly to denote a maximum threat of [†]* attackers.

Governor Brown asserts that we must reject the position of the staff and applicant as contrary to the plain meaning of "several" which, by dictionary definition, is an indefinite term. He contends that a limiting meaning can be considered only if the regulation is ambiguous; since it is not, the customary meaning controls and no interpretation of the regulatory language is permissible. Br. at 9-10. The Governor also points to several congressional hearings[19] as well as agency reports and studies to support his contention that, in response to a general concern that existing security was inadequate, the Commission adopted Section 73.55 to upgrade reactor protection. He then argues it would be anomalous for the Commission to have reduced the size of the threat to only [†] attackers when, during the pendency of the reactor security rulemaking, the agency staff reviewed the adequacy of licensee security plans under guidelines[20] employing a larger threat. Br. at 4-6; 11. Finally, Governor Brown relies on the press conference remarks and congressional testimony[21] of two senior staff members to argue that the Commission intended to create an indefinite design basis threat in the reactor security rule. Br. at 6-9.

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[18] See p. 59, *supra*.

[19] See Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 94th Congress., 2d Sess., Safeguards in the Domestic Nuclear Industry (Committee Print No. 17, 1976); Oversight Hearings on Nuclear Energy — Safeguards in the Domestic Nuclear Industry Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 94th Congress, 2d Sess. (1976).

*The symbol [†] indicates that Safeguards Information has been deleted by the Commission from the text. See 10 CFR §73.21. A single symbol is used regardless of whether a word, a phrase, a sentence or whole paragraphs or pages have been excised from the text.

[20] In this regard Governor Brown relies on Regulatory Guide 1.17, "Protection of Nuclear Power Plants Against Industrial Sabotage" (June 1973) and Regulatory Guide 5.43, "Plant Security Force Duties" (January 1975).

[21] See Oversight Hearings on Nuclear Reactor Security Against Sabotage Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 95th Cong., 1st Sess. (1977) (statement of Edson G. Case).

The staff primarily relies on four internal agency memoranda to support its position that the Commission intended the design basis threat of "several persons" to be limited to no more than [†] attackers. These memoranda purport to document the development of the final reactor physical protection regulation after the publication for comment of a proposed rule.[22] Indeed, the staff concedes in its brief, as it did at the hearing, that it used only this interpretation of the regulation in its review of the Diablo Canyon security plan. Br. at 8. The staff supports its argument by comparing the external attack component of the design basis threats applicable to commercial power reactors[23] and fuel cycle facilities.[24] The threats are identical except the Commission characterized the threat for the theft or diversion of special nuclear material as "a small group" with "the ability to operate as two or more teams";[25] and the staff asserts that the omission of the team criteria from the threat for commercial reactors indicates that the Commission intended "several persons" to be a number [†] — the minimum number which can act as two teams. Br. at 7.[26]

2. As its delegate, our task is to ascertain the Commission's intent when it used in the regulation the words "several persons" to characterize the size of the design basis threat. We are not free to interject our preference as if we were the regulation's author. But we are not constrained by a purported canon of construction to close our eyes to relevant administrative history, as Governor Brown advocates. Br. at 9-10. As the Supreme Court has warned,

> words are inexact tools at best and for that reason there is wisely no rule of law forbidding resort to explanatory legislative history no matter how "clear the words may appear on 'superficial examination' ".[27]

Therefore we must look to the entire regulation, its subsequent amendments and any other relevant regulatory history to discern the Commission's meaning. Here, as we shall see, the available aids to construction overwhelmingly support a limiting definition of the word "several." We are persuaded that the Commission intended the design basis threat in Section 73.1(a)(1) to constitute a maximum of [†] attackers.

In 1974 the Commission published for comment a proposed rule to amend its regulations for the physical protection of reactors.[28] At that time, the regulations required reactor licensees to submit to the agency security plans for protection against industrial sabotage.[29] But the regulations did not specify any criteria or requirements for reactor security systems. Rather, the agency staff provided general direction in the form of regulatory guides and imposed specific requirements on an ad hoc basis as license conditions.[30] The Commission's proposed rule sought to add a new section 73.55 to the regulations specifying detailed requirements for nuclear power reactor security systems and security organizations. But the proposed rule did not specify any level of performance that the protection system would have to achieve.

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[22] The contents of these staff documents are discussed at pp. 65-69, *infra*.

[23] See 10 CFR §73.1(a)(1).

[24] See 10 CFR §73.1(a)(2).

[25] *Id.*

[26] Applicant's arguments follow the same course as the staff's, and SLOMFP's are merely a rebuttal of applicant's arguments.

[27] *Harrison* v. *Northern Trust Co.*, 317 U.S. 476, 479 (1943), quoting *United States* v. *American Trucking Ass'n.*, 310 U.S. 534, 544 (1940). See also *United States* v. *Culbert*, 435 U.S. 371 (1978); *Cass* v. *United States*, 417 U.S. 72 (1974).

[28] 39 *Fed Reg*. 40038 (November 13, 1974).

The Commission added the performance requirement or design basis threat in response to rulemaking comments. These comments indicated that a general performance requirement would aid in the implementation of the rule by explicitly indicating the level of protection required.[31] And, in its statement of considerations accompanying the final rule published in 1977, the Commission identified its reasons for adopting the threat, with its particular attributes and characteristics, set forth in the regulation:

> On the basis of intelligence and other relevant information available to the NRC there are no known groups in this country having the combination of motivation, skill, and resources to attack either a fuel facility or a nuclear power reactor. In addition, studies have indicated that the generic characteristics (*i.e.*, the "defense-in-depth" concept of reactor plant design) of commercial power reactors make the releasing of radioactivity by acts of sabotage difficult. Furthermore, the potential consequences of a reactor sabotage are judged to be less than the extreme consequences which could be associated with the successful detonation of an illicit nuclear explosive device. Having considered these factors, the Commission has concluded that the level of protection specified in §73.55 is adequate and prudent at this time. The kind and degree of threat and the vulnerabilities to such threats will continue to be reviewed by the Commission. Should such reviews show changes that would dictate different levels of protection the Commission would consider changes to meet the changed conditions.[32]

The Commission's explanation for choosing the design basis threat of section 73.1(a)(1) is directly contrary to Governor Brown's contention that the "several persons" characterization of the size of the threat was intended to be an indefinite term (*i.e.*, connoting a sliding scale) meant to ensure flexibility in designing reactor security systems for the site-specific threats associated with each particular facility. Rather than directing each licensee to assess the potential local threat to its facility, as Governor Brown suggests, the Commission made a generic assessment of the potential for radiological sabotage of commercial power reactors. On the basis of intelligence reports regarding the domestic threat, the technical difficulty of successfully sabotaging a power reactor, and the possible consequences of a successful sabotage effort, the Commission adopted a design basis threat positing "several" attackers. Moreover, the Commission reserved to itself — not individual licensees — the responsibility for monitoring the continuing validity of the design basis threat and amending the "kind and degree of threat" if future circumstances so warranted.

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[29] See 10 CFR §§50.34(c) and 73.40 (1974).

[30] See 10 CFR §50.34(c)(1974). See also Regulatory Guide 1.17, "Protection of Nuclear Power Plants Against Industrial Sabotage" (June 1973) and p. 83, *infra*.

[31] See 42 *Fed. Reg.* 10836 (February 24, 1977).

[32] *Id.*

Confirmation that the "several persons" language of the design basis threat did not impose a site specific intelligence gathering and assessment responsibility on licensees is provided by the Commission's 1978 amendment to Section 73.55(h)(1) of the reactor security regulations.[33] That Section directs licensees to execute "safeguards contingency plans" in accordance with the criteria set out in Appendix C to Part 73. Among other things, Appendix C requires that the contingency plan contain a statement of the "perceived danger" to the licensee's facility.[34] That requirement in the proposed amendment[35] prompted several industry complaints that the perceived danger to power reactors was within the purview of the Commission, and that requiring licensees to theorize about the threat would be a drain on their resources.[36] The Commission agreed and clarified[37] Appendix C by adding: "The statement of perceived danger should conform with that promulgated by the Nuclear Regulatory Commission. (The statement contained in 10 CFR 73.55(a) [*i.e.*, the design basis threat] or subsequent Commission statements will suffice.)"[38] In its statement of considerations accompanying the amended rule, the Commission reiterated that "the licensee should examine his facility or operation to determine its vulnerability in light of the adversary characteristics postulated by the Commission."[39] This Commission action, taken in response to comments that threat assessment was within the Commission's province, directly contradicts Governor Brown's argument that the Commission intended the size of the malevolent force in the design basis threat to be read "without a definite numerical limitation" so as to "ensure site-specific flexibility in designing security systems for the threats associated with each particular facility." Br. at 10.

In addition to establishing a generic threat as a design basis, the history of Section 73.55 also convincingly demonstrates that the Commission intended the size of the adversarial force to be numerically limited to [†] attackers. Staff

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[33] 43 *Fed. Reg.* 11962, 11965 (March 23, 1978).

[34] 10 CFR Part 73, Appendix C, Section 1.a.

[35] See 42 *Fed. Reg.* 25744, 25747 (May 19, 1977).

[36] See 43 *Fed. Reg.* 11962, 11963 (March 23, 1978).

[37] *Id.* at 11962.

[38] *Id.* at 11966.

[39] *Id.* at 11963.

Exhibits S-8 through S-11[40] chronicle the "several persons" language of the final reactor security rule and therefore deserve special attention. They consist of intra-agency memoranda and the staff introduced them without objection from any party. Tr. 1919.

Following publication of the proposed rule in 1974, the staff presented to the Commission in late 1976 a draft of a final rule containing a general performance requirement. That draft of Section 73.55 contained a design basis threat stating, *inter alia*, "(1) an external threat of [†] well-trained persons armed with pistols, shotguns, or rifles (including semi-automatic weapons), and who may be assisted by an insider (employee or unescorted person). . . ."[41]

Accompanying the draft rule was a cover memorandum to the Commission from the Director of the Office of Standards Development. The Director noted that, in response to the Commission's June 1976 instructions, the staff had re-evaluated the provisions of the draft rule to determine whether they were adequate and cost effective. To do this, the staff solicited comments from two industry groups and then met with those groups to discuss the rule.[42] The staff also formed a task force to inspect existing security systems at a representative sample of operating reactors in order to determine whether the draft rule would be effective in protecting against acts of sabotage by "(1) a small external group [†], armed with legal weapons, with the possible assistance of a plant employee. . . ."[43] After performing inspections at six sites containing nine reactors, the task force concluded that the draft rule would provide "substantial protection against an 'external threat (several individuals armed with legal weapons with possible minimal assistance from a plant employee). . . .' "[44] According to the Director, the staff's reassessment of the draft rule resulted in the addition of the general performance requirement,[45] which he recommended that the Commission adopt. The Director specifically cautioned, however, that publication of the specific threat level contained in the staff's draft would be "tantamount to deciding such information is not classified."[46]

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[40] The staff exhibits consist of the following:

Staff Exhibit S-8: SECY-76-242C, "Physical Protection of Nuclear Power Reactors Against Industrial Sabotage; Amendments to 10 CFR Parts 50 and 73," dated October 7, 1976, to the Commissioners, from Robert B. Minogue, Director, Office of Standards Development. Enclosure A — Refined Draft Effective Rule; Enclosure B — Summary of Significant Comments; Enclosure C — Draft Public Announcement; Enclosure D — Response to OGC Comments; Enclosure E — Response to OPE Comments.

Staff Exhibit S-9: Memorandum for Lee V. Gossick, Executive Director for Operations, and Peter Strauss, General Counsel, from Samuel J. Chilk, Secretary, "Staff Requirements — Policy Session 76-55, 9:25 A.M., Tuesday, December 14, 1976, Commissioners' Conference Room, D.C. Office," dated December 17, 1976 (Revised December 23, 1976).

Staff Exhibit S-10: Memorandum for Commissioners Rowden, Gilinsky and Kennedy from Ben C. Rusche, Director, Office of Nuclear Reactor Regulation, "Design Basis Threat Information/Response Force Requirements (§73.55)," dated February 2, 1977. Enclosure 1 — Staff Report on Response Force Requirements; Enclosure 2 — Proposed Changes to §73.55.

Staff Exhibit S-11: Memorandum for Lee V. Gossick, Executive Director for Operations, from Samuel J. Chilk, Secretary, "Reactor Physical Protection Rule (New Part 73.55)," dated February 11, 1977. Enclosure 1 — Detailed Comments on 73.55.

[41] Staff Ex. S-8, Enclosure A, p. 14.

The staff's draft of the statement of considerations accompanying the draft rule indicated that the general performance requirement was "stated in terms of specified threats" which "will be subject to continuing review by the "Commission" but "the level of protection required in §73.55 is based on a current assessment of its adequacy and achievability." *Id.* at 3.

[42] The industry was apparently concerned that the "level of protection should be stabilized now to avoid future backfit." Staff Ex. S-8, Enclosure B, p. 4.

[43] Staff Ex. S-8, SECY-76-242C, p. 2.

The Commission took up the staff's proposal on December 14, 1976 and "agreed in principle" with it.[47] Indeed, the Commission rearranged and expanded the description of the attributes of the attackers in the design basis threat from that contained in the staff draft but did not change the numerical threat level of [†].[48] Moreover, in order to emphasize the point, the Commission directed the staff to expand the discussion on the agency's commitment continually to review the design basis threat contained in the staff's draft statement of considerations.[49]

When the staff returned the modified rule to the Commission for final consideration, the Directors of the Office of Nuclear Reactor Regulation and the Office of Nuclear Material Safety and Safeguards proposed that the Commission "partially or completely withhold [the] detailed design basis threat definition" from the rule.[50] According to the Directors' memorandum to the Commissioners, denomination of a specific threat level in the rule raised two issues which the staff now sought to avoid. The first, which the Directors stated had "become all too evident during recent Commission/staff discussions concerning the proposed §73.55," was the "difficulty of articulating the basis for utilization of different design basis threats if that proves necessary for different types of facilities."[51] The second was that the Energy Research and Development Administration (ERDA) classified detailed design basis threat information for facilities under its jurisdiction and "[t]he need for and value of a degree of consistency between policies used by the two government agencies on the same type of information is recognized as very high."[52]

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[44] *Id.* It should be noted that in describing the size of the threat used by the task force to evaluate the protection provided by the draft rule, the Director generally characterized the threat as "a small external group," which he immediately qualified in specific terms as [†]. Then, in summarizing the task force's findings, the Director referred to the same external threat as "several individuals."

[45] The Director also informed the Commission that in specifying the threat levels for the general performance requirement, "specific consideration was given to providing consistency between reactors and nonreactors. . . ." *Id.* at 3. As explained by the Director:

> The general performance requirement has been stated in terms compatible with the [†] stated in the joint NRC-ERDA task force report for fuel cycle facilities. The Safeguards Supplement to GESMO and the companion regulation [†] as the baseline for safeguards performance. Continued use of the [†] will be reviewed at such time that (a) plutonium or high enriched uranium are adopted as basic power reactor fuel, and (b) fuel cycle safeguards have been upgraded to deal with the [†].

Id.

[46] *Id.* at 4.

[47] Staff Ex. S-9, Memo from the Secretary, p. 1.

[48] *Id.* at 2.

[49] *Id.* at 1. See n.41, *supra*. Compare Staff Ex. S-8, Enclosure A, p. 3 and 42 *Fed. Reg.* 10836 (February 24, 1977).

[50] Staff Ex. S-10, Memo from the Directors, p. 1.

[51] *Id.* The Directors' memorandum does not explain the basis for the staff's anticipation of regulatory difficulty in differentiating between fuel cycle facilities and power reactors. It is clear from the Director's memorandum, however, that the Commission was aware of the nature of the problem. In any event, this thread of staff concern runs throughout the history of the development of the design basis threat. See n.45, *supra*.

To avoid both these problems, the Directors suggested "replacing the specific numerical definition of threat in §73.55 with a generalized description and compensating [for] the lack of specificity by defining minimum and nominal response force requirements."[53] They explained that the size of the guard force "could be worded to achieve the desired level of protection against any particular threat without providing a positive numerical relationship to a threat."[54] Or, as indicated in the staff report accompanying the Directors' memorandum, the level of protection required to defend against the threat of [†] attackers as set forth in the draft rule could be accomplished by camouflaging the exact threat in a response force requirement specifying a nominal and minimum number of guards.[55] The Directors also provided the Commission with revised pages of the draft rule incorporating their proposal. These replaced the [†] characterization of the attack force in the design basis threat with "several persons" and added a provision to Section 73.55(h) specifying a nominal response force size of ten and an absolute minimum of five guards.

Shortly after receiving the new staff proposal, the Commission approved publication of the final physical protection rule. As reported by the Secretary, the Commission adopted the rule "originally proposed in staff paper SECY-76-242C, as amended in the February 2 memorandum from [the Directors of NRR and NMSS]."[56] Accordingly, the final reactor security rule — like the Directors' proposed regulatory language — characterized the size of the adversarial force in the design basis threat as "several persons" and specified a nominal response force size of ten and an irreducible minimum force of five guards.

This history leaves no reasonable doubt that the Commission intended the "several persons" language of the design basis threat to be limited to [†] attackers. To suggest, as Governor Brown argues (Br. at 7), that the Commission nowhere "spelled out" its intention to limit the design basis threat and that there is no basis to infer such intention is to ignore totally all of the regulatory history pointing in the opposite direction.[57] In short, Governor Brown's position implies that the Commission increased the size of the design basis adversarial force without (1) informing its staff, (2) analyzing whether the provisions of the reactor security rule would be either adequate or cost effective against the larger threat, or (3) increasing the size of the minimum response force.

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[52] *Id.*

[53] *Id.* at 3.

[54] *Id.* at 2.

[55] Staff Ex. S-10, Enclosure 1, pp. 2 and 4.

In its report, the staff determined that a response force ratio (*i.e.*, ratio of guards to attackers) must be equal to 1 to protect power reactors. The report then states: "Given the above response force ratio modified by a measure of conservatism, the minimum number of guards available for response to an assault may be determined. Therefore, for the presently specified threat, the minimum number of guards available for response at a nuclear power plant is judged to be 5." Staff Ex. S-10, Enclosure 1, p. 4. The "presently specified threat" referred to in the report was the draft Section 73.55 which stated at that time an external threat of [†] persons and an insider capable of participating in a violent attack. See Staff Ex. S-9, p. 2. The staff presumably arrived at a minimum of five guards by [†] as "a measure of conservatism."

[56] Staff Ex. S-11, p. 1.

Moreover, Governor Brown's argument is inconsistent with the Commission's subsequent statements concerning the size of the Section 73.1(a)(1) adversarial force. Five months after it promulgated the reactor security rule, the Commission published a proposed rule amending the safeguard requirements for fuel cycle facilities.[58] The external threat component of the general performance requirement in Section 73.20 of the proposed safeguards rule was identical to that for power reactors in Section 73.1(a)(1) except that the size of the attack force was characterized as "a small group" with "the ability to operate as two or more teams."[59] In a statement accompanying the proposed rule, the Commission contrasted the external threats for fuel cycle facilities and power reactors:

> The adversary postulated in the proposed regulation is different from that in §73.55 with respect to the size of the adversary force. The size of postulated adversary force against which the safeguards performance is to be evaluated has been expressed to indicate that the group is large enough to employ effective team maneuvering tactics, unlike the "several persons" single team postulated as the adversary in §73.55.[60]

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[57] Similarly, we find unpersuasive Governor Brown's argument that the remarks of the Director of NRR at a press conference after adoption of the rule indicate the indefiniteness of the size of the design basis adversarial force. Br. at 8-9. Taken in context, the Director's press conference response that the term "several persons" was "[o]bviously . . . greater than one and . . . smaller than 100" is not surprising. Gov. Ex. S-4, Press Conference Transcript dated February 22, 1977, p. 15. The Director had just responded to the same question that he would not put a range on the term. He then, in a lighter vein, merely recited the obvious when he used the quoted language. Indeed, the Director's response is consistent with his actions as one of the two principal advocates who urged the Commission to delete the specific threat level from Section 73.1(a)(1) and replace it with a generalized description in conjunction with a nominal and minimum response force requirement so as to conceal the exact numerical threat.

Equally unconvincing is Governor Brown's argument concerning the May 1977 congressional testimony of the Acting Director of NRR. Br. at 9. In answer to a question on the definition of "several persons," the Acting Director responded that the agency had not defined the size of the design basis threat further in any unclassified information. Gov. Ex. S-5 (for identification), Oversight Hearings on Nuclear Reactor Security Against Sabotage Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 95th Congress, 1st Session 11 (1977) (statement of Edson G. Case). Governor Brown argues that since Staff Exhibits S-8 through S-11 are not classified, these documents cannot be understood to limit the meaning of "several." At the time the Acting Director testified, however, these documents were undergoing classification review and could not be publicly released. Tr. 2084-85.

[58] See 42 *Fed. Reg.* 34310 (July 5, 1977).

[59] *Id.* at 34313.

[60] *Id.* at 34311.

After republishing the proposed rule,[61] the Commission adopted a final fuel cycle safeguards rule[62] with the same external adversary threat contained in the proposed rule. The fact that the Commission intended the "several persons" of the adversarial force [†] strongly suggests a limit of [†] persons for the design basis threat of Section 73.1(a)(1). This is so because a group of more than [†].[63] This additional evidence, combined with the other extensive regulatory history of the reactor safety rule, convinces us that the "several persons" language in the design basis threat must be interpreted as no more than [†] attackers.[64]

3. We have concluded that at the time the Commission promulgated the reactor security regulations, it intended the external threat to be limited to [†] attackers. No subsequent Commission action is inconsistent with this interpretation. If we have erred, however, in divining its intent, we are confident that the Commission will correct us. We are equally sure that the Commission will take appropriate action should it now believe that a new interpretation of the size of the design basis adversarial force is necessary.

Because we have interpreted the design basis threat as being limited to [†] attackers, we need not determine whether the applicant's Diablo Canyon security system and organization can successfully protect the facility against an adversarial force of [†] or more persons. But it does not perforce follow that, because the design basis threat is limited to [†] attackers, a larger group could successfully commit radiological sabotage at Diablo Canyon. We have little doubt on the basis of the entire record before us that the applicant's security system and organization could, with perhaps even the requisite degree of high assurance, protect the facility against some larger number of attackers.

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[61] See 43 *Fed. Reg.* 35321 (August 9, 1978).

[62] See 44 *Fed. Reg.* 68184 (November 28, 1979).

[63] Further support for this interpretation is also provided by the information contained in Staff Ex. S-8, SECY-76-242C, p. 3, on the size of the design basis adversarial force for fuel cycle facilities. See n.45, *supra*. The exhibit indicates that the external adversarial threat for fuel cycle facilities would subsequently be upgraded from a threat of [†] persons to a [†] as recommended in the GESMO safeguards study. Thus, in the language of proposed Section 73.20, [†]. 42 *Fed. Reg.* 34310, 34311 (July 5, 1977). The Commission confirmed that it intended to adopt the threat level recommended in GESMO when it republished the proposed safeguards rule. See 43 *Fed. Reg.* 35321, 35324 (August 9, 1978).

[64] We cannot accept Governor Brown's argument that "[i]t would be anomalous, indeed, if the NRC, while allegedly strengthening its regulatory requirements, would have reduced the size and character of the threats to be defended against by backing away from the then existing squad-size threat." Br. at 11, 4-6. Each of the minor premises on which Governor Brown builds his argument is erroneous. For example, Governor Brown contends that prior to the promulgation of Section 73.55 the staff reviewed the adequacy of licensee security plans employing an adversarial force larger than [†] attackers. Br. at 3-6. To establish this premise, he points to Regulatory Guides 1.17 (June 1973) and 5.43 (January 1975). Regulatory Guide 1.17 incorporates ANSI Standard N18.17 which, in turn, mentions a threat of a "small group." Regulatory Guide 5.43 mentions a threat of "squad size," which Governor Brown claims "customarily means six." Regulatory Guide 5.43 is inapplicable to power reactors and nowhere does ANSI Standard N18.17 or Regulatory Guide 1.17 define a "small group." As the history of Section 73.55 demonstrates, however, the staff, during the pendency of the rulemaking, often employed the term "small group" to mean [†] persons. See n.44, *supra*.

Nevertheless, the design basis threat which the applicant and staff considered for both the development of the security plan and its review was a threat of no more than [†] persons aided by an insider. James R. Miller, fol. Tr. 1911, p. 15; representation of applicant's counsel, Tr. 2245.[65] The record, therefore, does not include detailed analyses or systematic assessments of threats beyond that magnitude. Accordingly, the present record does not provide us with a sufficient basis for making a probative conclusion regarding larger threats. This is so because the level of confidence in successfully protecting the facility decreases as the number of attackers employing a high level of violence and sophisticated tactics and weapons increases beyond three.

The record does provide, however, a description of the Diablo Canyon security system and organization which was developed to meet the provisions of Section 73.55(b)-(h). Two of the expert witnesses most critical of the Diablo Canyon security system — Governor Brown's witness Louis O. Giuffrida[66] and SLOMFP's witness Jeremiah P. Taylor[67] — characterized the results of these security requirements as having transformed the applicant's facility into a "hard target." And, neither of these witnesses could name a single instance where a dissident group of any size had attacked a target of comparable "hardness" to Diablo Canyon. Giuffrida, Tr. 2516-17; Taylor, 2242-46. Governor Brown's other expert witness, Richard E. White,[68] not only conceded the "hardness" of the target but stated that it would take "far more people than [†] to successfully attack Diablo Canyon. White, Tr. 2808-09. Indeed, both Colonel Giuffrida and Chief Taylor expressed similar sentiments that it would be more reasonable to employ a force of ten to twelve rather than [†] to attack this type of target because a larger number would have a better chance of success. Giuffrida, fol. Tr. 2411, p. 20; Taylor, fol. Tr. 2213, p. 3; Tr. 2252. Chief Taylor stated that the applicant's perimeter security was one of the best he had ever seen and Colonel Giuffrida noted that the Diablo Canyon security system exceeded that of any United States military base in Vietnam with which he was familiar. Taylor, Tr.

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[65] [†].

[66] Colonel Giuffrida is a retired regular Army officer who spent a significant portion of his military career with the military police where, in various capacities, he dealt with security matters. At the time of the hearing, Colonel Giuffrida was the Director of the California Specialized Training Institute in San Luis Obispo, California. The CSTI is a state institute organized in 1971 by Colonel Giuffrida at the request of the Governor which presents specialized courses on such subjects as terrorism, emergency management, police officer survival and contingency planning for hazardous materials. Fol. Tr. 2411, pp. 1-2 and biographical data, fol. p. 32. We note that in May 1981 Colonel Giuffrida became the Director of the Federal Emergency Management Agency (FEMA).

[67] Chief Taylor retired from the San Francisco Police Department in 1980 after thirty-three years of service. He rose through the ranks of the Department and in 1977 he was appointed Deputy Chief of Police. In his last assignment he commanded the Department's Detective Bureau. Fol. Tr. 2213, biographical data fol. p. 17.

[68] Mr. White retired from the Federal Bureau of Investigation in February 1980 after twenty-five years of service. In his last assignment he served as Special Agent in Charge of the FBI Office in Sacramento, California, which oversaw the Bureau's activities in thirty-four California counties. Fol. Tr. 2346, pp. 1-3 and biographical data, fol. p. 15.

2258; Giuffrida, Tr. 2601, 2636-40. Colonel Giuffrida and Mr. White knew of no comparable security system at a civilian installation in the United States. Giuffrida, Tr. 2759-60; White, Tr. 2742.

On the basis of this record, we believe the security system at Diablo Canyon, developed to meet the requirements of section 73.55, provides a strong deterrent to any group that might contemplate malevolent acts against the facility.

B. Denial of Petition for Exception to Design Basis Threat

We have rejected Governor Brown's argument that in adopting its reactor security regulations, the Commission intended a flexible, site-specific design basis threat which, in this case, would dictate an attack force of up to twelve intruders. In the alternative, Governor Brown has petitioned for an exception to the numerical limitation on the size of the design basis threat pursuant to 10 CFR 2.758. Br. at 12. We must now determine whether special circumstances warrant an exception to permit consideration of a larger external assault force.

Commission regulations are not subject to attack in adjudicatory proceedings.[69] A party may petition for a waiver or exception, however, on the ground that special circumstances in a particular proceeding are such that application of the rule or regulatory provision would not serve the purpose for which it was adopted.[70] If the petition makes a prima facie showing of grounds for a waiver or exception, the matter must be certified directly to the Commission for determination.[71] Otherwise, the rule applies and may not be the subject of discovery, proof, or argument.[72]

In support of his petition, Governor Brown relies on testimony presented at the security hearing and summarizes the "special circumstances" in this case as follows:

> First, the uncontradicted expert testimony of Colonel Giuffrida, Mr. White, and Chief Taylor was that a group planning to attack the Diablo Canyon facility and having the design basis attributes specified in Section 73.1(a)(1) would *not* limit itself to [†] persons but rather would recruit a larger team. Such persons could number up to 12. Second, these witnesses also demonstrated that such design basis attackers *are* available for recruitment and could be trained, equipped, and moved to the facility undetected. Finally, they also testified that there is a terrorist threat in California — indeed, documented by the 1980 Report of the California Attorney General. Br. at 13.

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[69] 10 CFR 2.758(a).

[70] *Id.* at 2.758(b).

[71] *Id.* at 2.758(d).

[72] *Id.* at 2.758(c).

In Governor Brown's view, these facts, combined with the lack of any site-specific threat analysis, make it "imperative" that the regulation be waived. "Otherwise," he asserts, "Diablo Canyon could be permitted to operate despite all of the probative evidence that indicates that the design basis attackers could not be successfully resisted." This would not "serve the public health and safety and the common defense and security," and would thus be contrary to the purposes for which the regulation was adopted. Br. at 13-14.

Neither the allegations in Governor Brown's petition nor the evidence in the record before us make a prima facie showing of special circumstances which would justify a waiver or exception in this case.[73] Prima facie evidence must be legally sufficient to establish a fact or case unless disproved. Governor Brown's arguments amount to nothing more than (1) a generic attack that the design basis threat postulated in the Commission's security regulations is unrealistic, and (2) an assertion that there is "a significant potential terrorist threat in California." Br. at 13. As such, they are insufficient to show that the application of Section 73.1(a)(1) to the particular circumstances of this case would be contrary to the purposes for which the rule was adopted.

As stated in Section 73.1(a), the purpose of Part 73 is to prescribe requirements for the establishment and maintenance of systems for the physical protection of plants and materials. Security systems for protection against radiological sabotage are to be designed with reference to the design basis threat specified in Section 73.1(a)(1). As we have seen, the Commission did not intend that threat to be an open-ended one to be determined on a site-specific basis using local intelligence sources; rather, it specified an external threat of no more than [†] attackers — which it described as "several persons" — to provide guidance for the design of security systems. In the absence of a showing that a credible threat larger than the design basis exists with respect to a particular facility, a waiver or exception would not be justified and, indeed, would directly contradict the purpose of the rule.

As Governor Brown recognizes, the design basis threat is a "given"; its probability of occurrence is irrelevant for purposes of designing and evaluating the applicant's security system. Gov. Proposed Findings at 13. But, in order to make a prima facie showing that the hypothetical design basis threat is insufficient for a particular facility, it is essential that there be a demonstration of the likelihood that the actual threat to the plant in question is greater than that which the Commission determined should be postulated for nuclear plants in general. There is no such evidence in the record before us.[74]

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[73] No affidavits accompanied the petition (as required by 10 CFR 2.758(b)) because the Governor purportedly relied "solely on evidence already given under oath." Br. at 13, fn. 3. But the Governor also failed to provide any citations to the record, simply referring us to his "Brief of Proposed Findings of Fact and Conclusions of Law, especially Sections I and VI." *Id.* at 12. Ordinarily, we would decline to search the record and proposed findings for evidence in support of a party's allegations. Because Governor Brown's petition concerns a potentially serious safety matter we have reviewed the entire record to determine whether grounds for a waiver or exception are present. See pp. 72-74, *infra*.

Colonel Giuffrida testified that the applicant's analysis of its security plan postulated an unrealistic number of design basis intruders because an assault force of the type described in Section 73.1(a)(1) would not limit itself to [†] members for such an attack. Fol. Tr. 2411, pp. 19-20. Rather, they would recognize the need for a larger group, but would restrict their force to perhaps ten to twelve attackers as "the outside limit in span of control." *Id.* at 20. Similarly, Mr. White testified that a larger assault force (of unspecified size) would be more realistic, and Mr. Taylor considered a group of as many as twelve persons to be "logically predictable." White, fol. Tr. 2346, pp. 14-15; Taylor, fol. Tr. 2213, p. 3.

Colonel Giuffrida further testified that there are persons in the United States and throughout the world who meet the characteristics of Section 73.1(a)(1) and would be available to join forces with an individual or group that sought to assault a nuclear power plant. Fol. Tr. 2413, pp. 5-7. He cautioned that it would be a mistake to assume that the design basis attack would be made only by Americans or to rule out its possibility "on grounds that American terrorist groups as of now have not demonstrated either the interest or the capability to attempt such a hit." *Id.* at 28-30. He testified about various groups present in California which are "capable of terrorist acts." Tr. 2646-51, 2654-58. Finally, with the parties' stipulation that the Palestine Liberation Organization (PLO) has available to it all of the weapons contemplated by Section 73.1(a)(1), Colonel Giuffrida testified that the PLO would be capable of assembling a force of twelve design basis intruders to attack Diablo Canyon. Tr. 2627-33. He added that his testimony assumed that the PLO would gather its force elsewhere and bring it to California, because he had no basis for concluding that the PLO could gather such a force in California or elsewhere in the United States. Tr. 2633-34.

Nothing in the foregoing testimony, including that concerning the capabilities of the PLO, reveals a particularized threat to Diablo Canyon.[75] Colonel Giuffrida testified that in his opinion, an attack on Diablo Canyon in the next two years by a group of nine to twelve design basis intruders was "not likely." Tr. 2786-87. He added, however, that he was not a predictor of future terrorist activity and that he was unable to rule out the possibility of such an attack. Tr. 2791. Thus, the only evidence concerning the likelihood of a larger-than-design-basis attack occurring at Diablo Canyon is, at best, speculative and inconclusive. Accordingly, the witnesses' testimony that the applicant and staff used an unrealistic number of intruders as a design basis amounts to a generic challenge to the adequacy of Section 73.1(a)(1). As the Commission recently pointed out, the proper response to a generic issue such as this "is not waiver of the rule under 10 CFR 2.758 because this case presents no 'special circumstances,' but rulemaking to either amend or suspend the present rule."[76]

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[74] The existence of a record on this issue is unusual. Section 2.758(c) makes clear that if there is no prima facie showing of grounds for a waiver or exception, "no evidence may be received on that matter and no discovery, cross-examination or argument directed to the matter will be permitted, and the presiding officer may not further consider the matter." At the time of the hearing in this case, the proper interpretation of "several" as used in Section 73.1(a)(1) was in dispute. The waiver question was presented by Governor Brown after the hearing but before we ruled on the size of the design basis threat.

[75] Even if the PLO were established as a particularized threat to Diablo Canyon (as opposed to a generalized, potential threat to a variety of targets), the applicant would not necessarily be required to defend against it. Applicants or licensees need not provide for design features or other measures for the specific purpose of protection against the effects of attacks and destructive acts, including sabotage, by an enemy of the United States. *Florida Power and Light Co.* (Turkey Point, Units 3 and 4), 4 AEC 9, 11-12 (Commission Memorandum and Order of August 4, 1967), *affirmed sub nom. Siegel* v. *AEC*, 400 F.2d 778, 781-84 (D.C. Cir. 1968). (To the same effect, see 10 CFR 50.13, which indicates that

(Continued)

For the foregoing reasons, Governor Brown has not made a prima facie showing of special circumstances to justify an exception to Section 73.1(a)(1) in this case. Accordingly, his request that we certify to the Commission his petition for a waiver or exception is denied.

C. Other Challenges to the General Performance Objective and Requirements

Governor Brown has proposed a number of "factual" findings which are, in reality, legal arguments about the nature and purpose of the external component of the design basis threat of radiological sabotage.[77] As we have seen, the design basis threat is intended to be generic rather than site specific. Thus, there is no requirement that the applicant or staff perform "site-specific analyses or assessments of potential threats to Diablo Canyon," as Governor Brown asserts. Gov. Proposed

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the foreign enemy contemplated may be "a foreign government or other person.") Such protection "is a responsibility of the nation's defense establishment and of the various agencies having internal security functions." *Siegel v. AEC, supra*, 400 F.2d at 783 (quoting the Commission's statement of considerations, published at 32 *Fed. Reg.* 13445 (September 26, 1967)). Consistent with this principle, the Commission has clearly expressed an intention to limit the design basis threat of Section 73.1(a)(1) to domestic sabotage attempts. As mentioned above (p. 63, *supra*), in promulgating its final rules for physical protection of reactors, the Commission referred to the absence of "known groups in this country" having the requisite motivation, skill, and resources to attack a nuclear power plant. Similarly, in its statement of considerations accompanying the final upgraded physical protection rules for strategic special nuclear material and certain fuel cycle activities, the Commission again described the purpose of the design basis threat codified in Section 73.1(a) as defining "the general character of the domestic safeguards challenge." 44 *Fed. Reg.* 68184, 68186 (November 28, 1979). In other words, the Commission did not intend the design basis threat of radiological sabotage to include the possibility of an attack by international or transnational terrorists.

[76] *Metropolitan Edison Co.* (Three Mile Island, Unit 1), CLI-80-16, 11 NRC 674, 675 (1980). We note that pursuant to 10 CFR §2.802, "[a]ny interested person may petition the Commission to issue, amend or rescind any regulation."

[77] After initially proposing such findings, Governor Brown employs them repeatedly throughout his papers. See, *e.g.*, Gov. Proposed Findings at 28-29, 30-32, 43, 70-77.

Findings at 7. Similarly, there is no necessity to understand, characterize, and analyze "the attributes of the attackers . . . in light of the site-specific conditions at Diablo Canyon," because the characteristics and attributes of the adversary are also generic and are already set forth in the regulation. *Id.* Thus, the applicant need not postulate the "skills, training, dedication, weapons, tools, communications equipment, and strategy" of the external force "under the site specific conditions at its own Diablo Canyon Plant." *Id.* at 8. Nor must it understand and apply the design basis threat "both in terms of the persons deemed to assault the facility and the natural and man-made features pertaining to protection of Diablo Canyon." *Id.* at 9.

The regulations do provide for consideration of site-specific factors in the design and implementation of the applicant's physical protection system and in determining the number of armed responders needed (see pp. 103-104 [illegible] *infra*). But Governor Brown would have the design basis threat, rather than the applicant's response to it, keyed to site-specific features. This is precisely the opposite of what the regulations require. Governor Brown also takes issue with the applicant's characterization of the design basis threat, arguing that the applicant must approach the threat and develop its security system "in line with the proper characterization set forth by Colonel Giuffrida and Mr. White." *Id.* at 10. To the extent that the witnesses' characterization exceeds the regulatory requirements, however, it is a matter beyond our reach in this proceeding.[78] In a similar vein, the Governor argues that in arming its guards, applicant has not taken account of a long list of weapons such as fixed-wing aircraft, helicopters, mortars, rocket launchers, grenade launchers, and anti-tank weapons that various witnesses indicated would be available to terrorists. *Id.* at 12. But once again, the weapons used by the design basis attackers are established in the regulations. The fact that the NRC staff, prior to promulgation of the regulation in question, may have held a different view in responding to a congressional inquiry concerning what weapons would be available to the attackers[79] has no bearing on the application of the current rule. Indeed, the Commission specifically considered and rejected the possibility of requiring guards to be armed with automatic weapons when it issued its safeguards regulations.[80]

Governor Brown further asserts that the applicant has not accounted for design basis attacks by stealth or deception that diminish the availability and effectiveness of the guards "by diversionary attacks on the perimeter fences, explosions at various perimeter locations, or similar tactics." *Id.* at 11. Most of the examples which Governor Brown cites (*id.* at 28-39), however, necessarily would employ more than [†] persons acting as a [†].

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[78] Of course, if the Governor believes that the regulations seriously understate the nature of the threat to nuclear power plants, he may petition the Commission to amend these regulations. See n.76, *supra*, and accompanying text.

[79] See Staff Ex. S-16.

[80] See 42 *Fed. Reg.* 35321, 35325 (August 9, 1978); 42 *Fed. Reg.* 68184 (November 28, 1979).

See pp. 68-69 [†], *supra*. Thus, the Governor's assertions go beyond the intended capabilities of the design basis external attack force.[81]

Finally, Governor Brown argues that the Diablo Canyon security system and organization is incapable of protecting against attacks that might be inimical to the common defense and security. He asserts this is so because there are malevolent acts that could be taken against the PG&E facility which would cause radioactive releases below those resulting in the dose rates set forth in 10 CFR §100.11. And, according to the Governor "a design basis attack on Diablo Canyon that results in radioactive releases to the public (albeit below Part 100 levels) . . . is inimical to the common defense and security." Gov. Proposed Findings at 80-81.

The regulations establish requirements which are specifically designed to provide guidance for the development of a security system "which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security, and do not constitute an unreasonable risk to the public health and safety." 10 CFR §73.55(a). Governor Brown is correct that both these standards must be met before the applicant's facility may be licensed. But his conclusion that the "common defense and security" standard encompasses radiation releases resulting in doses less than those of Part 100 is without foundation. This regulatory term is directly derived from the Atomic Energy Act.[82] As the Commission has held,

> the common defense and security standard . . . refer[s] principally to: the safeguarding of special nuclear material; the absence of foreign control over the applicant; the protection of Restricted Data; and the availability of special nuclear material for defense needs.[83]

Or, as stated by the Court of Appeals in affirming the Commission's order, the "common defense and security" standard refers to

> such things as not allowing the industrial needs for nuclear materials to preempt the requirements of the military; . . . keeping such materials in private hands secure against loss or diversion; and . . . denying such materials and classified information to persons whose loyalties [are] not to the United States.[84]

Thus, defense and security considerations are addressed by the specific regulatory requirement of Section 73.55(b)-(h) or are irrelevant to commercial power reactors. And, to the extent applicant's security plan meets the specific requirements of these subsections, nothing further is required.

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[81] Similarly, intervenor SLOMFP's argument concerning the interdiction or destruction of the access road to the plant must fail for the same reason. SLOMFP Proposed Findings at 6, 9.

[82] See, *e.g.*, 42 U.S.C. §2014(g).

[83] *Florida Power & Light Company* (Turkey Point Nuclear Generating Units No. 3 and No. 4), 4 AEC 9, 12-13 (1967).

[84] *Siegel* v. *Atomic Energy Commission*, 400 F.2d 778, 784 (D.C. Cir. 1968).

IV. FACTUAL FINDINGS

A. Introduction

As previously noted, we recast the parties' numerous security contentions and issues into eight consolidated issues (many with several subparts) and raised two additional matters *sua sponte*.[85] The ten consolidated issues are set forth in Appendix A.[86] Because the matters raised and dealt with in Consolidated Issues 2 through 10 generally provide a description of the individual components of the Diablo Canyon security system, we have treated these issues first, in numerical order. Consolidated Issue 1, however, pertains to the integrated functioning of the entire security system and organization. Therefore, this issue is considered subsequent to issues 2 through 10. Finally, we have separated the question of the appropriate size of the armed responder force from Consolidated Issues 1 and 4 and have dealt with it last.

Before turning to the consolidated issues, we provide a brief description of the applicant's physical site, which should be helpful for a fuller understanding of our findings on applicant's security system.

The Diablo Canyon facility is located adjacent to the Pacific Ocean in San Luis Obispo County, California, approximately seven miles north of the village of Avila Beach which is roughly equidistant from Los Angeles and San Francisco. The plant sits on a small coastal terrace ranging in elevation from 60 to 150 feet with the seaward edge forming a near vertical cliff. Extending down to the coastal terrace are steep, brush covered hills which form part of the San Luis Mountains and attain an elevation of 1500 feet within a mile of the site. App. Ex. S-63, p. 31.[87] The applicant controls the 750 acres (known as the restricted area) immediately surrounding the facility and this area is fenced. *Id.*; Bryan A. Dettman, Tr.

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[85] In his Proposed Findings of Fact, Governor Brown makes his own aggregation of the matters presented in the case which does not correspond at all to the way they are presented in the consolidated issues. This approach has made our consideration of the complex questions raised much more difficult. It should be noted that our formulation of the first seven consolidated issues, to which Governor Brown did not object, expressly adopted and closely followed the wording and organization of subjects as they were originally proposed by Governor Brown himself. (See Rulings on Contentions, September 18, 1980, pp. 3, 4; also compare pp. 11-16 with "Statement of Specific Subjects on Which Governor Edmund G. Brown, Jr., Intends to Participate in the Security Plan Proceeding," September 2, 1980).

[86] The Table of Contents presents in capsulized form the topics covered by the consolidated issues.

[87] Applicant's Exhibits S-1 through S-50 are a series of photographs depicting individual aspects of the Diablo Canyon plant and security system. From the backgrounds appearing in Exhibits S-2 to S-9, one can gather an impression of the site itself. Also, Figures 1.2-1 and 2.1-3 of the Diablo Canyon FSAR (Volume 1) provide a plot plan and an aerial photographic view of the site.

1634-35, 2939; Gov. Ex. S.1, Fig. II-1. The property adjacent to the restricted area is ranch land and generally unpopulated. App. Ex. S-64, p. 11-1 and Appendix B; App. Ex. S-62, p. 11-1 and Appendix B;[88] Dettman, Tr. 1790. The primary access to the site is a seven-mile long private paved road from Avila Beach, the entrance to which is controlled by a manned guardhouse. App. Ex. S-63, p. 31; App. Ex. S-64, p. 2-1; App. Ex. S-1. Access to the facility is also possible from the north over a dirt track across private ranch land and then through a gate at the boundary of the restricted area. In dry weather and with the right vehicle, access is also possible from east of the facility over the company's power line roads. App. Ex. S-64, Appendix B; Dettman, Tr. 2917, 2939.

The Diablo Canyon facility is a two-unit pressurized water reactor with two containment structures, a turbine building, an auxiliary building and a security building forming the main plant area. A remote, cooling water intake structure is located on the shoreline. App. Ex. S-63, p. 32; App. Ex. S-50. [†]. Dettman, Tr. 1482-83; App. Exs. S-3, S-4, S-6, S-7, S-50. [†]. Dettman, Tr. 1493, 1814-17; Lawrence G. Lunsford, Tr. 1818; App. Exs. S-43 through S-49. Also located on the site some distance from the protected areas are a 500 kV and a 230 kV switchyard. App. Ex. S-63, p. 33. [†]. App. Ex. S-64, p. 3-6; Dettman, Tr. 1790-91.

Finally, because some construction activities are still under way at Unit 2 and the units share the turbine and auxiliary buildings, [†]. App. Ex. S-64, pp. 10-1 to 10-3; App. Exs. S-23, S-24, S-25. [†]. Lunsford, Tr. 1803-05; Dettman, Tr. 1826-27.

B. Adequacy, Implementation and Review of Safeguards Contingency Plan (Consolidated Issues 2 and 3)

One of the response provisions of Section 73.55(h) requires licensee to prepare, in accordance with the criteria of Appendix C of Part 73, a safeguards contingency plan for dealing with threats and radiological sabotage. As described in Appendix C, the goal of such plans is to organize licensee's response to safeguards contingencies by providing a predetermined, structured response which is fully integrated with the actions of local law enforcement agencies. To accomplish this goal, the contingency plan must contain: (1) an established set of decisions and actions to satisfy stated objectives; (2) a specification of the information, standards and procedures to effect the decisions and actions efficiently; and (3) an identification of the specific person, group or organization responsible for each decision and action. In particular, Appendix C requires that a safeguards contingency plan contain a background section identifying the perceived danger, the incidents with which the plan will deal, and the general way such matters will be treated. Part 73, App. C, §1. The plan must also have a generic planning base and a licensee planning base. The former must define the criteria for initiating and terminating responses together with the decisions, actions and information necessary to bring about such responses. Part 73, App. C, §2. The latter contains the various factors affecting contingency planning at each particular facility, such as licensee's organizational structure, the site's physical layout and hardware systems. Part 73, App. C, §3. In addition, the contingency plan must contain a responsibility matrix which identifies the organizational entities responsible for each decision and action associated with specific responses to each safeguards contingency. Part 73, App. C, §4. The detailed implementing procedures are the last category of information required by Appendix C. Although the procedures are not submitted to the Commission for approval, they must be available at the licensee's site as a guide specifying the actions to be taken and the decisions to be made by each member of the organizational units identified in the responsibility matrix. Part 73, App. C, Introduction and §5.

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[88] The applicant introduced, without objection, two versions of its security plan. Tr. 1948. Applicant's Exhibit S-62 is revision 9 of the plan, dated March 16, 1978. This version had been reviewed and approved by the staff at the time of the security hearing. Tr. 1585. Applicant's Exhibit S-64 is revision 10 of the plan dated May 1, 1979 and, at the time of the security hearing, had not yet been approved by the staff

After preparing the contingency plan, the licensee must implement, revise, and maintain it. 10 CFR §73.40(d). Before implementing the plan, however, the licensee's safeguards capabilities must be fully functional, its personnel trained to respond to the plan's contingencies and its detailed procedures available at licensee's site. 10 CFR §§50.54(p) and 73.40(c). Once the plan is implemented, the licensee must annually review its safeguards procedures, audit its security system, and test its safeguards system along with the response commitments from law enforcement agencies. 10 CFR §73.40(d). And, to insure objectivity, the review must be conducted by individuals who are independent both of security program management and of persons who are directly responsible for implementing the security program. *Id.*

The applicant submitted a safeguards contingency plan to the agency, and the staff subsequently approved it. App. Ex. S-63; Staff Ex. S-15. Under the regulations, however, applicant's contingency plan need not be implemented until applicant receives an operating license. See 10 CFR §73.55. Because of the nature of the licensing process, the security hearing has preceded by a considerable period applicant's implementation of its contingency plan and the grant of an operating license. Therefore, we obviously cannot determine whether applicant has complied with all the regulatory requirements relating to its contingency plan. Rather, in this instance we must, in effect, approve applicant's present plans for future regulatory compliance. We must leave it to the Director of the Office of Nuclear Reactor Regulation to determine, before issuing an operating license, that the applicant has satisfied all applicable requirements.[89] For example, the detailed procedures which are required to be prepared and then maintained at the applicant's facility need not be submitted to the agency as part of the contingency plan. Nor are those procedures (with but one minor exception)[90] part of the record before us. The Director, however, must ensure that applicant's procedures meet the general mandate of Appendix C and that they are available at Diablo Canyon before issuing applicant an operating license. Similarly, it is the Director's responsibility to see to it that applicant has adequately and properly trained the appropriate personnel to respond to the safeguards incidents set out in applicant's plan. See generally, Charles E. Gaskin, fol. Tr. 1913, pp. 7-8.

We are satisfied that applicant's contingency plan is in conformity with Appendix C. Applicant's plan contains all necessary categories of information and each of the four parts of the plan (*i.e.*, background section, generic planning base, licensee planning base and responsibility matrix) meets the criteria spelled out in the regulations. App. Ex. S-63. Indeed, applicant's plan is a virtual copy of the format and substance of the sample plan contained in Regulatory Guide 5.54 (March 1978). Staff Ex. S-5, pp. 5.54-7 *et seq*. For example, applicant's generic planning base in chapter two delineates the contingencies for which there are plans and for each event states the objective to be accomplished, the sequence of necessary decisions and actions to be undertaken if that event occurs, and the set of appropriate data to facilitate making those decisions and taking those actions. App. Ex. S-63, pp. 5-25; PG&E Panel, fol. Tr. 1584, p. 10. Accordingly, the plan adequately defines the criteria for initiating and terminating prescribed responses to specific threats and properly indicates the decisions, actions, procedures and supporting information to bring about those responses.

We are also satisfied, on the basis of the record before us, that applicant has adequately provided for the future implementation, revision and maintenance of the Diablo Canyon safeguards contingency plan. With the submission of the contingency plan, the applicant indicated its general intention to comply with Sections 73.40(c) and (d) of the regulations. Staff Ex. S-14, Attachment A. Our findings on the adequacy of applicant's security training are set forth in respect to Consolidated Issue 4 (pp. 81-88, *infra*) and will not be repeated here. We note, however, that the applicant instructs the security and operating personnel who have safeguards contingency responsibilities in the applicable procedures for each of the events set forth in the plan. PG&E Panel, fol. Tr. 1584, pp. 11, 22. The company also intends to conduct practical drills for its security personnel involving the plan's contingencies. Larry C. Fisher, Tr. 1879-81. Further, as we state in our findings on Consolidated Issue 6 regarding applicant's liaison with local law enforcement, PG&E already has taken steps to familiarize the law enforcement agencies with Diablo Canyon and intends future practical drills involving such agencies. PG&E Panel, fol. Tr. 1584, p. 10; Dettman, Tr. 1655, 1679-81. These measures will ensure that the Diablo Canyon security force can timely identify and adequately assess safeguards threats and take the necessary responsive actions to neutralize them.

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[89] A similar situation is presented with respect to many other regulatory requirements as well. See, *e.g.*, pp. 88, 91-92, *infra*.

[90] See n.125 [†], *infra*.

In addition, PG&E will annually review its contingency procedures and practices to test the safeguards system and verify its local law enforcement response commitments. This review will also include an audit of the testing and maintenance program for the security system. The review will be done by members of the PG&E Security Department (*i.e.*, the Security Representative) or the Steam Generation Department who are independent both of security program management and of personnel who have direct responsibility for implementation of the security program. PG&E Panel, fol. Tr. 1584, p. 11; App. Ex. S-62, p. 14-1.

C. Establishment, Management, Training, Equipment, and Qualification of a Physical Security Organization (Consolidated Issue 4)

Pursuant to 10 CFR §73.55(b)(1), a licensee must establish a security organization to protect its facility against radiological sabotage. At least one full-time member of that organization who has the authority to direct physical protection activities must be onsite at all times. 10 CFR §73.55(b)(2). The licensee must have a management system to provide for the development, revision, implementation and enforcement of its security procedures. That system must include (1) written security procedures documenting the structure and responsibilities of the security organization; and (2) provision for written approval of those procedures and any subsequent revisions of them by a person who has overall responsibility for security functions. 10 CFR §73.55(b)(3).

Section 73.55(b)(4) provides that members of the security organization must be trained, equipped, and qualified to perform their assigned security duties in accordance with the criteria of Appendix B of Part 73. Appendix B contains the detailed and extensive requirements for the selection, training, equipping, testing and qualification of security personnel. In addition, licensees must submit a training and qualifications plan outlining their procedures for compliance with Appendix B and generally must begin following the plan within 60 days after it is approved by the staff. Completion of the training and qualification of security personnel is not required, however, until two years after NRC approval of the plan is granted. 10 CFR §73.55(b)(4).

The applicant has established a command structure for its security organization which ensures that a qualified individual is always onsite to direct the activities of the security force. Responsibility for general supervision of activities at applicant's facility resides in the plant superintendent. [†]. The security shift supervisors, like their superiors, are full-time PG&E employees, and all have the training and experience to direct the security force during both routine and crisis operation. In addition, the company has two individuals currently employed in the corporate security department who are fully qualified as security shift supervisors (and at the time of the hearing was training a third) to provide a substantial backup capability for these positions should the need arise. App. Ex. S-64, pp. 1-1 to 1-2; PG&E Panel, fol. Tr. 1584, p. 12; Miller, fol. Tr. 1911, pp. 22-24.

[†]. App. Ex. S-64, p. 1-2. The security force sergeant and all other members of the force below him in the chain of command are not PG&E employees; rather, they are Pinkerton security officers under contract to the company.[91] The Pinkerton personnel, however, are fully trained by the company. Ronald G. Todaro, Tr. 2894-95.

Further, the applicant has established an adequate management system to provide for the development, revision, implementation, and enforcement of its security procedures. The Plant Staff Review Committee will review all plant procedures, including security procedures, at least once every two years. The Corporate Security Department will perform a yearly audit of the entire security program and submit detailed written reports of its findings and recommendations. In addition, the security supervisor will be continually responsible for the design, implementation, and review of security procedures. A number of changes to the security plan have already been made in response to the staff's concerns or the applicant's internal audits. PG&E Panel, fol. Tr. 1584, pp. 1213; Miller, fol. Tr. 1911, p. 25.

At the time of the security hearing in November 1980, the matter of the selection, training, equipment and qualification of the security force at Diablo Canyon was in a state of transition. The applicant had already submitted to the staff in July 1980 its training and qualification plan for complying with Appendix B and was awaiting staff approval.[92] Shortly after securing that approval, applicant would be obligated to begin implementing its plan and would be allowed two years to achieve full compliance with Appendix B, as provided in the regulations. In the interim, however, the regulations still required applicant to train the members of its security force so that they would be capable of protecting Diablo Canyon against radiological sabotage. See 10 CFR §73.55(a), (b)(3), and (b)(4).

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[91] The Commission's regulations require that when a licensee employs a contract guard force, the written agreement between the licensee and contractor shall clearly show that 1) the licensee remains responsible for maintaining security in accordance with the regulations and licensee's security plan; 2) the NRC has the right to inspect, copy and remove all security reports and documents; 3) the contract security personnel must be capable of performing all their assigned duties and responsibilities in carrying out licensee's security plan and the regulations; and 4) the contractor will not assign any personnel to the site who have not been made aware of these responsibilities. 10 CFR §73.55(b)(1). No party challenged the provisions of the contract between the applicant and Pinkerton and that contract is not part of the record of this proceeding.

[92] The applicant's training and qualification plan was not offered into evidence by the company. The staff states in its proposed findings of fact that on January 1, 1981, it approved the applicant's plan. Staff Proposed Findings at 30, n.22.

The program for personnel selection, training, equipment, and qualification presented in applicant's prefiled direct testimony and set forth in its security plan (and which had provided the basis for the staff's approval of that plan) was not based on Appendix B but rather on the requirements of Regulatory Guide 5.20.[93] App. Ex. S-62, pp. 1-6 to 1-10; App. Ex. S-64, pp. 1-6 to 1-9; PG&E Panel, fol. Tr. 1584, p. 14; Miller, fol. Tr. 1911, p. 27; Gaskin, fol. Tr. 1913, p. 9. That guide was issued in 1974, long before the Commission's adoption of 10 CFR §73.55. It summarily sets out general criteria which the staff considered acceptable under the then applicable regulatory requirements for training, equipping and qualifying guards and watchmen for the physical protection of plants and material. See pp. 62-63 *supra*.

[†]. App. Ex. S-62, pp. 1-3 to 1-4; App. Ex. S-64, pp. 1-3 to 1-4; Todaro, Tr. 2892-94; Miller, Tr. 2109-10. [†]. Dettman, Tr. 1656-7. Security guards must also meet the minimum mental and physical qualifications of Regulatory Guide 5.20. App. Exs. S-62, pp. 1-4 to 1-5; App. Ex. S-64, pp. 1-4 to 1-5; Staff Ex. S-4, p. 5.20-2.[94]

The Diablo Canyon security officers are equipped with uniforms, firearms, communication devices, and other security equipment. [†]. App. Ex. S-62, p. 1-9; App. Ex. S-64, p. 1-9; App. Exs. S-34, S-35; Dettman, Tr. 1490-91; Lunsford, Tr. 1718.

Applicant's security plan also provides for basic training consisting of an 80-hour sequence of classroom instruction and examination that includes the following topics: security plan overview; emergency plan overview; general plant overview; radiological safety; criminal law; search and seizure; report writing; personnel identification; access control; package control; vehicle control; fire control; bomb recognition and search; chemical agents; first aid; self-defense; crowd and mob control; security communications and alarms; alarm response; operational emergencies; firearms; and procedures. There is also a minimum of 40 hours of on-the-job training. Further, firearms training includes range practice and guards must be requalified semiannually. Specialized followup training and requalification are conducted on a quarterly basis and include such topics as records and reports, alarm systems, routine procedures, emergency procedures, law of arrest, and threat situations. App. Ex. S-62, pp. 1-6 to 1-10; App. Ex. S-64, pp. 1-6 to 1-9.

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[93] Regulatory Guide 5.20, "Training, Equipping, and Qualifying of Guards and Watchmen" (January 1974). This regulatory guide is Staff Exhibit S-4.

[94] We reject the suggestion of SLOMFP's witness that security personnel at Diablo Canyon should be "requalified" by means of monthly polygraph examinations to test their loyalty. Taylor, fol. Tr. 2213, pp. 11-12. Besides the fact that this procedure would violate California statutes, frequent examinations would be impractical, detrimental to morale, and unreliable. Dettman, Tr. 2883-92. See Calif. Labor Code §432.2 (App. Ex. S-65 for identification).

Governor Brown's expert witnesses put a great deal of emphasis on the need for guard force training. The gist of their testimony was that, in order to meet and overcome the design basis threat, the security force should be trained to function as a team and should engage in frequent and realistic mock exercises; this training should involve coordination with local law enforcement agencies as well. White, fol. Tr. 2346, pp. 4-8; Giuffrida, fol. Tr. 2412, pp. 8-14. In his proposed findings of fact, Governor Brown takes the position that the current level of training is inadequate and that the proposed future training discussed at the hearing is also inadequate. Gov. Proposed Findings at 47-52.[95] In this regard, Governor Brown's proposed findings ignore the fact that under the regulations, the applicant's training program will be superseded in the future by the provisions of Appendix B of Part 73. PG&E Panel, fol. Tr. 1584, p. 15; Miller, fol. Tr. 1911, pp. 26-28. Significantly, the Governor's witnesses did not offer any opinion of the adequacy of the training called for under that Appendix.

When it adopted the reactor security regulations in 1977, the Commission noted that it had under consideration a regulation concerning guard training and qualifications.[96] In promulgating the Appendix B training requirements in 1978, the Commission stated "that the upgrading of licensee guard quality was necessary."[97] The Commission also compared the content and scope of licensee's training programs with the provisions of Regulatory Guide 5.20 and concluded "that present training programs for new guards would not produce the quality needed to assure the effective protection of special nuclear materials, facilities, or shipments."[98] The Commission therefore believed that the training provisions of Appendix B, which, *inter alia*, were designed to meet the design basis threat of 10 CFR §73.1(a)(1), would tend to produce a better qualified and more effective guard force than was present at facilities where guards had been trained in accordance with Regulatory Guide 5.20.

A comparison of the requirements of Appendix B with those of Regulatory Guide 5.20 reveals the addition of a number of areas of training in the former that have no counterpart in Regulatory Guide 5.20.[99] Among these items, many[100] are directed towards training the response force in team response tactics — one of the necessary training elements most stressed by Governor Brown's expert witnesses, Colonel Giuffrida and Mr. White. Giuffrida Tr. 2793; White fol. Tr. 2346, pp. 4-5.[101] Several other of the Appendix B provisions[102] directly address the type of armed assault which the design basis threat of Section 73.1(a)(1) characterizes.[103] In contrast, the threat which the training in Regulatory Guide 5.20 is designed to meet is considerably less potent than the design basis threat set forth in 10 CFR

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[95] SLOMFP's proposed findings of fact make no mention of security force training.

[96] 42 *Fed. Reg*. 10836, 10837 (February 24, 1977).

[97] 43 *Fed. Reg*. 37421, 37424 (August 23, 1978). .

[98] *Id*.

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[99] Part 73, App. B §IID lists the numerous areas in which training is required. Among the requirements for power reactors for which there appears to be no counterpart in Regulatory Guide 5.20 are the following:

9. Adversary group operations.
10. Motivation and objectives of adversary groups
11. Tactics and force that might be used by adversary groups to achieve their objectives.
12. Recognition of sabotage related devices and equipment that might be used against the licensee's facility or shipment vehicle.
33. Response force organization.
34. Response force mission.
35. Response force operation.
36. Response force engagement.
38. Security command and control system during contingency operation.
55. Contingency response to confirmed intrusion or attempted intrusion.
56. Security system operation after component failure.
58. Security coordination with local law enforcement agencies.
60. Contingency duties.
62. Use of and defenses against incapacitating agents.
64. Contingency procedures.
67. Basic armed and unarmed defensive tactics.
68. Response force deployment.
69. Security alert procedures.
71. Response force tactical movement.
72. Response force withdrawal.
73. Response force use of support fire.
78. Site specific armed tactical procedures and operation.

[100] See, *e.g.*, n.99, *supra*, items 34, 35, 36, 38, 68, 69, 71, 72 and 73.

[101] Governor Brown's witness White also expressed his concern regarding the ability of the security force to function in the event that their field radios failed. We note that NUREG-0464, "Site Security Personnel Training Manual" (1978), which was published for comment at the same time as Appendix B, contains a section on response force engagement. (See n.99, item 36, *supra*). The training on that subject includes methods of command and control using voice and arm-hand signals. NUREG-0464, p. III-61.

[102] See, *e.g.*, n.99, *supra*, items 9, 10, 11 and 12.

[103] In its rebuttal testimony the applicant described the training program that it was presently using to train the security force at Diablo Canyon. This program involved group exercises, contingency drills, and exercises in which personnel play the role of the intruder. Tr. 2943-56. While it was never explicitly stated, it appears that applicant was in fact using, at least in part, its proposed Appendix B training and qualification plan program for current training rather than the program described in the security plan. See Miller, fol. Tr. 1911, p. 28. For example, the current program described in applicant's rebuttal testimony covered a two-month period (Todaro, Tr. 2943, 2946), while the program set forth in the security plan covered a three-week period. App. Ex. S-62, pp. 1-6 to 1-7.

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§73.1(a)(1).[104] Similarly, the "high assurance" objective of 10 CFR §73.55(a) for meeting the design basis threat is not shared by Regulatory Guide 5.20.

Our review of applicant's security plan training program based on Regulatory Guide 5.20 leads us to conclude, as did the Commission before us when it promulgated Appendix B, that the training complying with that guide is inadequate to prepare the security force to meet the design basis threat of 10 CFR §73.1(a)(1) — a threat which applicant's security force is required to counter. In particular, it does not address the need for team movement and tactics by the response force, nor does it offer a focus on the types of assault that the force might be called upon to meet.

The circumstances of this case, however, have obviated any need on our part to determine precisely what training beyond that based on Regulatory Guide 5.20 is required. The applicant has announced its intention to implement its guard training and qualification plan to meet the requirements of 10 CFR §73.55(b)(4) (*i.e.*, Appendix B training) by no later than January 1, 1982.[105] The staff agrees with the proposed schedule.[106] As a practical matter, the applicant's proposal amounts to a commitment to complete the Appendix B training and qualification prior to receipt of a full power operating license.[107] We agree with the applicant's implicit assessment that its guard training and qualification plan should be completely implemented prior to full power operation and believe that the operating license should be conditioned accordingly.[108]

We find that, upon successful completion of the Appendix B requirements, the applicant will have adequately demonstrated that its security organization is capable of responding to design basis threats in sufficient time to prevent sabotage or sabotage attempts inimical to the public health and safety or to the common defense and security. In particular, security personnel will have been required to demonstrate the required knowledge, skill, and ability to perform a myriad of security tasks, including contingency responses to confirmed or attempted intrusion, and team tactical procedures and operation. Thus, they will have completed the type of training and rehearsal which we find is essential and that Governor Brown's witnesses deemed necessary to an adequate defense of the Diablo Canyon facility. We must leave it to the Director of Nuclear Reactor Regulation to determine before authorizing full power operation that the applicant has satisfied all the criteria of Appendix B.

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[104] Appendix A of Regulatory Guide 5.20 states the threat that the training program should address as follows:

a. Lone individuals familiar with the construction and operation of the facility . . . ,
b. A group of several individuals, some of whom may be armed with weapons such as rifles, side arms, and explosives,
c. A group of unarmed individuals engaged in disorderly conduct or mob activities.

These three individual threats are significantly less severe than the maximum threat expressed in §73.1 of several well armed, well trained, dedicated individuals, aided by an active insider (see p. 59, *supra*). By its own terms, the guard training and qualification program of Appendix B was established to assure that security personnel would be capable of responding to that threat set forth in §73.1.

[105] Letter to Frank J. Miraglia, Chief, Licensing Branch No. 3, Division of Licensing, Office of NRR, from Philip A. Crane, Jr., PG&E counsel, dated July 16, 1981.

[106] Letter to Malcolm H. Furbush, PG&E Vice-President and General Counsel, from Frank J. Miraglia, Chief, Licensing Branch No. 3, Division of Licensing, Office of NRR, dated August 31, 1981.

[107] According to the latest NRC estimate, the licensing process for Diablo Canyon Units 1 and 2 cannot be completed before January 1982. U.S. Nuclear Regulatory Comm., "Regulatory Licensing Status Summary Report" (Internal Working Copy, May 29, 1981).

[108] Pursuant to 10 CFR §73.55(b)(4), the training and qualifications plan also includes detailed requirements concerning the security equipment that must be carried by or available to members of the security force. We assume that, upon implementation of the applicant's training and qualifications plan, all of the required equipment not now included in the security plan will have been provided. We leave it to the Director of NRR to ensure that this is the case. In this regard, we note that the equipment currently used by the Diablo Canyon security force (see p. 83 [†], *supra*) is substantially the same as that set forth in Appendix B. See Part 73, App. B §V.

Finally, we note that on July 17, 1981, the Licensing Board issued a partial initial decision which, contingent upon resolution of the security issue, would authorize the issuance of a license to permit fuel loading and low power testing at Diablo Canyon. LBP-81-21, 14 NRC 107. The Board regarded its decision as incomplete without security findings and found that it had no basis to rule on that subject. *Id.* at 112, 144.

This situation demands our attention. Presumably the proposed fuel loading and low-power testing, if authorized by the Commission, may take place before January 1, 1982, the date by which applicant has committed itself to meet the full requirements of Appendix B. Therefore, the adequacy of security protection prior to that date could be called into question (see p. 86, *supra*). We believe two observations are pertinent in regard to this matter.

First, it appears that as long ago as November 1980, the applicant was probably engaged in Appendix B training (see n.103, *supra*). In any event, that training had to be initiated in early March of 1981.[109] If PG&E is to meet its obligation to fully implement Appendix B by January 1, 1982, and given the time required to administer the additional training, a significant portion of applicant's guard force will have already received the training that Appendix B requires over and above the provisions of Regulatory Guide 5.20.

Second, the Licensing Board has found that "the risks from fuel load and low-power testing are considerably reduced from that of full-power operation of the Diablo Canyon reactors." LBP-81-21, *supra*, 14 NRC at 138. It based this conclusion on several factors, including the lower fission-product inventory present, the greater amount of time available for operators to terminate or mitigate an accident, and the reduced likelihood of occurrence of events leading to a radiological release. *Id.* We have not had the opportunity to review the entire record which underlies the Board's opinion, but our reading of that opinion and portions of the record, as well as our own earlier deliberations on closely related sabotage issues for this very plant,[110] give us no reason to question the validity of the Board's factual findings.

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[109] Section 73.55(b)(4) requires that the applicant begin to follow Appendix B within 60 days of the approval of its plan by the NRC. PG&E received staff approval of its Appendix B plan on January 1, 1981 (see n.92, *supra*).

In these circumstances, we find that the training level of the Diablo Canyon guard force (somewhere between that specified by Regulatory Guide 5.20 and that of Appendix B) is adequate to provide high assurance against acts of radiological sabotage during the period of fuel loading and low-power testing. We note here in passing that the Director of Reactor Regulation himself must also be assured of the adequacy of the security organization training before issuing the low-power license.

D. Communications System (Consolidated Issue 5)

Subsection (f) of Section 73.55 requires that every on-duty member of the security force be capable of maintaining continuous communication with the operators of the central alarm station (CAS) and the secondary alarm station (SAS). The alarm station operators in turn must be capable of calling other security force members and local law enforcement authorities for assistance. 10 CFR §73.55(f)(1). In addition to conventional telephone service, each alarm station must have the capability of continuous two-way voice communication, either directly or through an intermediary, with local law enforcement authorities by means of radio or microwave. 10 CFR §73.55(f)(2) and (3). All non-portable communications equipment required by the regulations must be powered by a redundant independent source. 10 CFR §73.55(f)(4). Finally, Section 73.55(g), which deals with testing and maintenance of security systems, requires that the equipment for onsite communications be tested at the beginning of each work shift and that equipment for offsite communications be tested at least once a day. 10 CFR §73.55(g)(3).

[†].

Regular telephone service is provided by a Bell System affiliate, the Pacific Telephone and Telegraph Company. [†]. App. Ex. S-64, p. 7-1, Dr. Donald G. Rose, fol. Tr. 1893, pp. 13-14.

[†]. App. Ex. S-64, pp. 7-1 to 7-2; App. Ex. S-63, p. 32; Rose, fol. Tr. 1893, pp. 13-16.

[†]. App. Ex. S-64, p. 7-2 to 7-3; Rose, fol. Tr. 1893, p. 13; PG&E Panel, fol. Tr. 1584, p. 16; App. Exs. S-16, S-12, Dettman, Tr. 1486.

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[110] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2), ALAB-334, 3 NRC 809, 821 *et seq.* (1976). In this opinion, we supported the Licensing Board's conclusion that nuclear fuel could be stored at the Diablo Canyon plant without creating an unreasonable risk of public harm. Among the sources of risk considered were the actions of a group of saboteurs who were assumed to have unimpeded access to the fresh nuclear fuel on the site. *Id.* at 821.

[†]. App. Ex. S-38; Dettman, Tr. 1491. [†]. App. Ex. S-64, pp. 7-3 to 7-4; Rose, fol. Tr. 1893, pp. 12-15. [†]. App. Ex. S-64, p. 7-4; Rose, fol. Tr. 1893, p. 14.

[†]. PG&E Panel, fol. Tr. 1584, pp. 18-22.

[†].

To comply with the requirements of Appendix C to 10 CFR Part 73, the applicant has established detailed operating procedures for the Diablo Canyon security communications equipment. PG&E Panel, fol. Tr. 1584, p. 17. Although these procedures are not before us, we note that the Director of NRR must be satisfied that the company's security personnel are trained to implement them before issuing applicant a license. The applicant also has established a procedure for testing its communications equipment. *Id.* [†]. App. Ex. S-64, pp. 12-2 to 12-3. We have already set forth in respect to Consolidated Issue 4 our findings on the adequacy of applicant's security training (pp. 81-84, *supra*) and will not repeat them here. Suffice it to note that the applicant has familiarized and trained the members of its security organization with the Diablo Canyon communications systems and has developed contingency plans addressing the loss of offsite communications and the necessary compensatory measures which the security organization must take. PG&E Panel, fol. Tr. 1584, pp. 11, 22; App. Ex. S-64, pp. 1-6 to 1-7; App. Ex. S-63, pp. 18-19, 97-101. Further, as we state in our findings on Consolidated Issue 6 regarding applicant's liaison with local law enforcement (p. 92 [†], *infra*), [†]. App. Ex. S-63, pp. 35-36.

We are satisfied that the applicant's extensive communications equipment, systems and procedures conform to the Commission's regulations and are sufficient to enable the Diablo Canyon security organization to meet the design basis threat.

E. Liaison with Local Law Enforcement Authorities (Consolidated Issue 6)

Section 73.55(h)(2) provides that a licensee "shall establish and document liaison with local law enforcement authorities." The response requirements of subsection (h)(4) then provide that once a threat is detected and assessed, the licensee must concurrently act to neutralize it by (1) interposing the plant security force between the adversary and vital areas and (2) "[i]nforming local law enforcement agencies of the threat and requesting assistance." 10 CFR 73.55(h)(4). Appendix C, which sets forth the criteria for safeguards contingency plans, requires that the plan show the main and alternative entry routes to the facility for law enforcement assistance forces and the control points for marshalling and coordinating response activities. Part 73, App. C, §3b. The plan must also list the available local law enforcement agencies (LLEA), their response capabilities and criteria for response, as well as provide "a discussion of working agreements or arrangements for communicating with these agencies." Part 73, App. C, §3d. Finally, Section 73.40(d) requires that a licensee, as part of its annual contingency plan review, verify the response commitments from LLEA.

Once again,[111] many of Governor Brown's proposed "factual" findings on "PG&E's Liaison and Coordination with Local Law Agencies"[112] are, in reality, legal arguments about the nature and scope of the Commission's regulations. For example, Governor Brown posits findings that applicant's security system is fatally flawed because "[n]o mock exercises have been conducted by PG&E and LLEA to identify and resolve obvious coordination problems which can only be worked-out by meaningful practice under realistic conditions." Gov. Proposed Findings at 58. Yet the Commission's regulations do not require that applicant and LLEA engage in such tests and drills.

In 1977 when the Commission published Appendix C in proposed form, it contained a final section entitled "Development and Maintenance of the Plan."[113] Among the requirements of that section was one stating that "[p]eriodic drills or tests will be made to ensure that safeguards contingency responses follow those set forth in the plan."[114] Industry commenters complained that it was inequitable to hold licensees responsible for testing the actions of entities not under their control.[115] In the final rule adopting Appendix C, the Commission deleted this provision and explained in its accompanying statement of considerations:

> The Commission recognizes the inappropriateness of holding licensees responsible for actions of persons not subject to licensee control. Therefore, licensee responsibility during periodic drills or tests has been clarified to exclude responsibility for testing the reaction of response forces not under his control.[116]

In view of the Commission's having intentionally dropped this express joint-exercise provision, a similar requirement cannot reasonably be implied as part of its other regulatory provisions.

Moreover, the required coordination between the applicant and local law enforcement authorities is different both in type and in degree from that suggested by Governor Brown. Gov. Proposed Findings at 53-55; see counsel's argument, Tr. 1651-52. Section 73.55(h)(2) requires that applicant "establish and document liaison" with local authorities. In this context, the plain meaning of "liaison" is simply a communication to establish mutual understanding.[117] Where the Commission intends licensees to establish a greater degree of coordination than

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[111] See pp. 74-77, *supra*.

[112] Gov. Proposed Findings at 53-62.

[113] 42 *Fed. Reg.* 25744, 25747 (May 19, 1977).

[114] *Id.*

[115] 43 *Fed. Reg.* 11962 (March 23, 1978).

[116] *Id.* at 11963.

[117] See Webster's Third New International Dictionary, p. 1302 (1971).

"liaison" with local law enforcement authorities, it says so expressly. The parallel provision of Section 73.46(h)(2) requires that licensees of fuel reprocessing facilities "establish and document *response arrangements* that have been made with local law enforcement authorities" (emphasis supplied). This difference in levels of coordination with LLEA for fuel cycle facilities and commercial power reactors[118] is consistent with the Commission's position that the potential consequences of reactor sabotage are less than the extreme consequences made possible by the theft of formula quantities of strategic special nuclear material.[119] Accordingly, Section 73.55(h)(2) requires only that applicant clearly communicate with the appropriate local law enforcement authorities so that any misunderstanding concerning when the applicant will request assistance and when the local agency will respond are avoided. Prearranged, detailed plans for interfacing applicant's security force and the LLEA response force so they may together respond to a myriad of security contingencies are not required by the regulations.

We are satisfied that the applicant's coordination with local law enforcement authorities complies with the Commission's regulations. Many measures which the applicant has already taken or, at the time of the hearing, intended presently to implement go substantially beyond the minimum regulatory requirements. Such steps as the company's familiarization program for local law enforcement authorities (pp. 92-93, *infra*) and planned training exercises at Diablo Canyon with law enforcement personnel (p. 93, *infra*) should ensure effective working arrangements with local authorities.

Because the Diablo Canyon facility is located in an unincorporated area of San Luis Obispo County, [†] has primary law enforcement responsibility for the plant. Under the California Emergency Operations Plan, the [†] is also the area law enforcement coordinator with the authority to mobilize other law enforcement agencies should the need arise. In the event of a need for additional assistance at Diablo Canyon, [†] App. Ex. S-63, p. 35; App. Ex. S-64, p. 1-14. [†]. App. Ex. S-62, Appendix B. [†]. *Id.*[120] At the time of the hearing these written response commitments were several years old. The applicant subsequently verbally confirmed them and believes that they are accurate and up-to-date. Moreover, the applicant has a continuous and ongoing relationship with the local law enforcement authorities. Dettman, Tr. 1832-33; Lunsford, Tr. 2957. Although we would prefer that applicant had shown greater initiative and introduced into the record current written LLEA response capability commitments, the existing ones, combined with their subsequent verbal confirmation to the applicant, are sufficient documentation to satisfy the regulations. We note, however, that the Director of Nuclear Reactor Regulation must be satisfied at the time he issues applicant an operating license that the LLEA commitments remain valid. Of course, once applicant has received a license, these commitments must be verified each year as part of applicant's annual contingency plan audit.

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[118] See also 10 CFR §73.50(g)(2), where fuel storage facilities are treated in the same manner as power reactors with regard to licensee liaison with LLEA.

[119] See, e.g., 42 *Fed. Reg.* 10836 (February 24, 1977).

[120] A discussion of LLEA response times appears at pp. 106-107, *infra*.

[†]. App. Ex. S-63, p. 35; see p. 92, *infra*. [†].[121] *Id.* [†]. PG&E Panel, fol. Tr. 1584, pp. 22-23.[122]

The applicant's safeguards contingency plan identifies the PG&E personnel authorized to request LLEA assistance. App. Ex. S-63, p. 29. [†]. *Id.* at 36; App. Ex. S-64, p. 1-15. The contingency plan also identifies those security contingencies for which offsite assistance is to be called and applicant trains its security personnel in the necessary procedures for such incidents. App. Ex. S-63, pp. 5-24, 39-124; PG&E Panel, fol. Tr. 1584, p. 22. [†]. *Id.* at 11, 63. We are satisfied, therefore, that the applicant's security personnel are adequately trained about when, how and which local law enforcement agencies are to be called for assistance.

Both the applicant's contingency plan and security plan detail the entry routes to the plant available to local law enforcement authorities. App. Ex. S-63, pp. 31, 33; App. Ex. S-64, Appendix B. [†]. App. Ex. S-63, pp. 36-37. [†]. App. Ex. S-63, p. 36; App. Ex. S-64, p. 1-15. [†]. These command arrangements have been discussed by the company with LLEA officials and, of course, the applicant cannot establish the response or command policy of the [†]. PG&E Panel, fol. Tr. 1584, p. 23; Dettman, Tr. 1654.

The applicant provides a yearly six-hour familiarization course at the Diablo Canyon site for members of the [†]. The course is for all members of the local law enforcement agencies who hold the rank of sergeant or above and is designed to provide them with a general understanding and knowledge of applicant's site and security plan. App. Ex. S-64, p. 1-14; PG&E Panel, fol. Tr. 1584, p. 23; Dettman, Tr. 1655. Among other things, the course includes classroom instruction on the plant's operation, emergency plan, security plan and federal reactor security regulations. It also provides a description of the applicant's site and an overview of the Diablo Canyon security organization including such things as the size, training, capabilities and structure of the force. The classroom instruction is augmented by a tour of the site and facility which focuses on the alarm and communication systems, access control and badging procedures and such physical features as the protected area perimeter, access points, and vital areas. App. Ex. S-64, Appendix B; PG&E Panel fol. Tr. 1584, pp. 23-24. At the time of the hearing, the applicant was in the process of updating a manual containing basic plant information to be provided on a restricted basis to the local law enforcement authorities. App. Ex. S-64, p. 1-15; Dettman, Tr. 1646, 1649. In addition to the LLEA personnel who have attended the applicant's familiarization course, both the [†] have visited the site on several occasions; the applicant intends to conduct future joint training exercises and drills with these special LLEA units as well as with regular local law enforcement officers. The applicant also intends to continue its yearly familiarization program to ensure that newly promoted LLEA personnel will be capable of responding to security emergencies at Diablo Canyon. Lunsford, Tr. 1792-93, 2957; Todaro, Tr. 2956; App. Ex. S-64, p. 1-14. Recognizing that the applicant cannot establish the command policy of the responding LLEAs, we are satisfied that the applicant's arrangements with local law enforcement authorities provide for suitable crisis management and an adequate chain of command (both prior to and after the arrival of offsite assistance) to deal with security contingencies at Diablo Canyon.

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[121] See p. 89 [†]. *supra*

[122] See p. 89 [†]. *supra*.

Finally, it is important to place in proper perspective the role local law enforcement authorities will play in answering applicant's call for assistance in responding to a security contingency at Diablo Canyon. In part because of the isolated location of the Diablo Canyon facility, the applicant depends on LLEA assistance to the minimum extent possible to protect the plant against adversary action. App. Ex. S-63, p. 36. The initial response to neutralize any attempt of radiological sabotage will be made by applicant's security force. *Id.* at 5. [†]. In our view the applicant's response force ratio, combined with all the other components of the Diablo Canyon security system, reduce the significance of the response times of the local law enforcement authorities. Indeed, in approving the applicant's security and contingency plans, the staff gave no credit for the arrival and assistance of the LLEA and viewed the LLEA's role as one of apprehending any intruders. Gaskin, fol. Tr. 1913, p. 14; Miller, Tr. 2182-83.

F. Detection and Surveillance Systems (Consolidated Issue 7)

Subsection (e) of Section 73.55 addresses the regulatory requirements for detection aids in reactor security systems. It provides that all alarms must annunciate in two separate continuously manned alarm stations, one of which must be located within the protected area. The onsite central alarm station must be considered a vital area, its walls, doors, ceiling, floor, and any windows must be bullet resisting and it must be located within a building such that the interior of the station is not visible from offsite. 10 CFR §73.55(e)(1). All alarm communications in the alarm station must indicate the type and location of the alarm. Further, all alarm devices, as well as the transmission lines to annunciators, are required to be tamper indicating and self checking; *i.e.*, there must be an automatic indication of a failure of the alarm system or component, or when the system is on standby power. 10 CFR §73.55(e)(2). Finally, subsection (e)(3) requires that all emergency exits within the protected and vital areas be alarmed.

Under the Commission's regulatory scheme for reactor security systems, a complete physical protection plan consists of overlapping parts. Therefore, to some extent, all of the subsections of Section 73.55 play a part in the detection and surveillance functions of the security system. Most directly relevant to these functions, however, are the additional regulatory requirements set forth in the subsections (c), (d), and (f) dealing with barriers, access, and response to intrusions. For example, in addition to the physical barrier requirements, Section 73.55(c) also requires that all exterior areas within the protected area must be periodically inspected to detect the presence of unauthorized persons, vehicles or materials. 10 CFR §73.55(c)(4). All exterior areas within the protected area must also be sufficiently illuminated so that the isolation zones adjacent to the protected area may be monitored for intruders. 10 CFR §73.55(c)(5).

The access requirements of Section 73.55(d) serve a vital detection function by exposing potential threatening activities. All points of personnel and vehicle access into protected areas must be positively controlled. At the point of entry into a protected area, all persons must be identified and searched for firearms, explosives, incendiary devices or other items which could be used to commit radiological sabotage. 10 CFR §73.55 (d)(1). All hand carried packages, material for delivery, and vehicles entering the protected area must be similarly searched and all non-licensee vehicles escorted. 10 CFR §73.55(d)(2), (3) and (4). The personnel badging and escort requirements of Section 73.55(d)(5) and (6) are specifically designed to aid in detecting unauthorized individuals within the protected area. As with access to protected areas, licensees must positively control all points of personnel and vehicle access to vital areas. Only those individuals who require access to vital equipment to perform their duties are routinely permitted into vital areas and they must be specially badged. All unoccupied vital areas must be locked and alarmed. 10 CFR §73.55(d)(7). Access to the reactor containment must be through doors or hatchways which are locked and alarmed; whenever frequent access is necessary, positive access control by a guard or watchman is required to assure that only authorized personnel and material enter the containment. 10 CFR §73.55(d)(8).

Finally, the response requirements of Section 73.55(h)(6) require a capability for observing the isolation zones and protected area perimeter (preferably by closed circuit television) which limits the exposure of responding personnel to attack. Although the purpose of this observation capability is to facilitate assessment of a threat and any subsequent response, it serves an important surveillance and detection function as well.

[†]. App. Ex. S-64, pp. 3-3 and 3-6; App. Ex. S-50; PG&E Panel, fol. Tr. 1584, pp. 24-25; Rose, fol. Tr. 1893, p. 18. [†]. See App. Ex. S-50. [†]. Rose, fol. Tr. 1893, p. 18.

[†]. PG&E Panel, fol. Tr. 1584, p. 25; Rose, Tr. 2182. [†]. *Id.*

At Diablo Canyon, a detection system such as the one proposed by intervenor SLOMFP (Taylor, fol. Tr. 2213, pp. 8-10), encompassing a vibration or strain system at the protected area boundary, would not enhance security and does not favorably compare [†]. Such a detection system incorporates either a device affixed directly to a fence to detect small vibrations or a device that can detect changes in the tension of one or more wires stretched along the fence. Both devices are capable of detecting the presence of an individual climbing or cutting through a fence. Rose, fol. Tr. 1893, p. 19. Vibration or strain devices have high false alarm rates, are easily seen and circumvented, and are incapable of detecting an individual going over or under a fence if the fence is not touched. *Id.* For these reasons, the staff discourages their use in reactor security systems. Rose, Tr. 2183. [†]. Rose, Tr. 1993.

[†]. App. Ex. S-64, p. 3-5; App. Ex. S-62, p. 3-4 and Appendix H, pp. H-18 to H-20; App. Ex. S-50; PG&E Panel, fol. Tr. 1584, p. 26; Dettman, Tr. 1606.

[†]. Dettman, Tr. 2920-21, 2980; Alfred W. Medcalf, Tr. 1789; App. Ex. S-64, pp. 11-1 to 11-2. [†]. App. Ex. S-64, p. 3-5; PG&E Panel, fol. Tr. 1584, p. 2. [†]. *Id.* [†]. App. Ex. S-15; Shiffer, Tr. 1636. [†]. App. Ex. S-15.

[†]. App. Ex. S-64, p. 3-4. [†]. *Id.* at pp. 3-6 to 3-7; App. Ex. S-50.

[†]. App. Ex. S-64, p. 3-7; Rose, fol. Tr. 1893, p. 18.

[†]. App. Ex. S-56. [†]. App. Ex. S-64, pp. 5-2, 5-3, 6-1, Dettman, Tr. 1728-29.

[†]. App. Ex. S-64, p. 3-7. [†]. App. Exs. S-18 and S-19. [†].[123] App. Ex. S-64, pp. 6-1, 6-2, and Appendix H; App. Ex. S-62, Appendix H; App. Ex. S-16, S-17; Dettman, Tr. 1485-86. [†]. PG&E Panel, fol. Tr. 1584, p. 26; Dettman, Tr. 1600-01; App. Ex. S-64, Appendix H. [†]. App. Ex. S-18, S-19. [†]. PG&E Panel, fol. Tr. 1584, p. 26; Dettman, Tr. 1602. [†]. App. Ex. S-64, pp. 6-1, 6-2 and Appendix H. [†]. App. Ex. S-64, p. 3-6; Dettman, Tr. 1761.

[†]. App. Ex. S-64, pp. 3-7, 3-8; App. Exs. S-2, S-3. [†]. App. Ex. S-64, pp. 3-8, 12-2; App. Exs. S-10 to S-13; Dettman, Tr. 1484-85. [†].[124]

[†]. App. Ex. S-64, pp. 3-8, 3-11, 4-2; App. Ex. S-3; Dettman, Tr. 1480.

[†]. App. Ex. S-64, p. 5-4; App. Exs. S-14, S-56; Rose, fol. Tr. 1893, p. 20.

[†]. App. Ex. S-64, p. 5-4; Dettman, Tr. 1485. [†]. App. Ex. S-64, pp. 5-4, 13-2. [†]. App. Ex. S-62, Appendix H, p. 30. [†]. App. Exs. S-63, p. 34; S-64, pp. 3-8 and 3-9.

[†].[125] Todaro, Tr. 1736, 2914-15.

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[123] Operators of CAS and SAS are trained in security and alarm procedures using both alarm station consoles. Lunsford, Tr. 1829; Todaro, Tr. 2948. The applicant has ordered an extra console for training in the future. Medcalf, Tr. 2948-49.

[124] See p. 98 [†], *infra*.

[125] [†]. Gov. Ex. S-7 (Applicant's Security Procedure SP-613(S)). See p. 103 [†], *infra*.

[†]. App. Ex. S-64, pp. 3-4, 3-7, 4-1. [†]. *Id.* at p. 2-1; Dettman, Tr. 1630-34, 1641-42. [†]. App. Ex. S-64, pp. 1-2 to 1-3; Robert Patterson, James D. Shiffer, and Medcalf, Tr. 1795-97.[126]

We are satisfied that the applicant's extensive detection and surveillance equipment and procedures are in conformity with the regulations and that they are sufficient to provide an effective warning of threatened malevolent activities.

G. Identification of Vital Areas Where Radiological Sabotage Is Possible (Consolidated Issue 8)

The Commission's regulations define a "vital area" as any area which contains vital equipment; and the latter as the equipment, devices, materials or systems which could directly or indirectly endanger the public health and safety by exposure to radiation if they fail or are released or destroyed. If vital equipment should fail or be released or destroyed, the equipment or systems which must function to protect the public health and safety also are considered vital. 10 CFR §73.2(h) and (i). All vital equipment must be situated within a vital area so that access to it is through at least two barriers (one of which must be physically separate from the protected area perimeter). The barriers must be of sufficient strength that, in combination with the other components of the security system, the performance requirements of Section 73.55(a) are met. 10 CFR §73.55(c)(1) and (2).

The staff has further divided vital areas into two categories, Class I and Class II.[127] The former are those areas containing systems or components the failure or destruction of which results in a direct release of radiation. The latter areas are those containing systems or components the failure or destruction of which would result in the release of radiation only in conjunction with additional sabotage in at least one other separate vital area. Roy A. Haarman, fol. Tr. 1917, p. 3; Rose, fol. Tr. 1893, p. 20; Staff Ex. S-6, pp. 2-3. In its security plan, the applicant has identified the vital systems and equipment at Diablo Canyon and then described the vital areas in which such equipment is located as either Class I or Class II areas. App. Ex. S-64, pp. 5-1 to 5-2. Detailed drawings in the security plan specify the precise locations of the vital areas. *Id.* at Appendix D; App. Exs. S-50 through S-61. The security plan also details the composition of the plant's vital area barriers, which description attests to the substantial strength of all such barriers. App. Ex. S-64, p. 5-3. [†]. Dettman, Tr. 1709-10.

The applicant's inventory of vital equipment and vital areas has been independently verified by an engineering team from the Los Alamos Scientific

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[126] See also pp. 80-81, *supra*.

[127] Staff Ex. S-6, "Definition of Vital Areas, Revision 1 — Review Guideline No. 17."

Laboratory. That team systematically analyzed the Diablo Canyon facility using a computer code applying graphic fault tree logic for the thousands of combinations of events and locations capable of leading to radiological sabotage. Like the applicant, the review team compiled its inventory of vital areas using the assumption that the "undesired goal" was a release of radiation resulting in doses in excess of those set forth in 10 CFR §100.11. Haarman, fol. Tr. 1917, p. 4; App. Ex. S-64, p. 5-1. This same type of review has been applied to approximately 40 other light water reactors in this country. To avoid prejudicing the outcome, the entire review was conducted without reference to the applicant's security plan until the final step, when the review team's results were compared with the security plan. The review confirmed that PG&E had properly identified in its security plan all vital areas where acts of radiological sabotage could occur. Haarman, fol. Tr. 1917, pp. 3-4, 6.

We find, therefore, that the applicant has adequately specified the vital areas at Diablo Canyon where acts of radiological sabotage within the meaning of 10 CFR §73.2(p) could occur; and we are satisfied that the company has complied with the regulatory requirements regarding vital area barriers. In addition, the proper specification of vital areas, combined with all the other components of the Diablo Canyon security system and organization, will ensure an adequate and timely response by applicant's security force to any design basis threat of radiological sabotage.[128]

H. Compensatory Measures for Compressor Building Intrusion into Isolation Zone (Consolidated Issue 9)

The physical barrier provisions of Section 73.55(c) require, among other things, isolation zones adjacent to the physical barrier of a facility's protected area. Such zones must be clear of all objects which could conceal or shield an individual and must be of sufficient size so that people on either side of the barrier can be seen in the event of its penetration. 10 CFR §73.55(c)(3); 10 CFR §73.2(k). At Diablo Canyon, an air compressor building (with a roof height of approximately ten feet) is located just outside and adjacent to the perimeter fence on the northeast side of the facility. The regulations, however, permit the authorization of security measures in lieu of any specific regulatory requirement as long as the substitute measures provide an equivalent level of protection. 10 CFR §73.55(a). This circumstance led us to inquire about the efficacy of applicant's security measures to compensate for the location of the compressor building in the isolation zone. [†]. PG&E Panel, fol. Tr. 1584, p. 29; Miller, fol. Tr. 1911, p. 29; App. Ex.

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[128] [†] See p. 95 [†]. *supra* [†]. Ex. 62, Appendix H, p. 30; see p. 95. [†] *supra*. [†].

S-64, p. 3-2; App. Exs. S-27 through S-29. [†]. App. Ex. S-64, p. 3-2; Miller, fol. Tr. 1911, p. 29. [†]. Dettman, Tr. 1824-26. Accordingly, we find that the compensatory security measures employed by applicant provide protection equivalent to that provided by the isolation zone. Moreover, we note that it is the company's intention to remove the compressor building once all major construction at the site is completed. PG&E Panel, fol. Tr. 1584, p. 30.

I. Emergency Vehicle Exception to Access Requirement (Consolidated Issue 10)

The regulations require that the licensee control all points of personnel and vehicle access into a protected area. 10 CFR §73.55(d)(1). All persons entering a protected area must first be identified and then searched, either physically or with the use of equipment capable of detecting firearms, explosives, and incendiary devices. *Id.* All hand-carried packages must be searched in the same manner and, with certain exceptions, all material for delivery into a protected area must be identified and then searched. 10 CFR §73.55(d)(2) and (3). Similarly, all vehicles entering a protected area, "except under emergency conditions," must be searched and, with the exception of designated licensee vehicles, then escorted by a member of licensee's security organization. 10 CFR §73.55(d)(4). Those individuals who are authorized entry into a protected area without escort must display a picture badge, while all others authorized entry must be escorted and display a badge indicating that they require an escort. 10 CFR §73.55(d)(5) and (6). Because the regulations require emergency vehicles to be escorted but exempt such vehicles from other access requirements, we raised the issue of how the applicant's security force confirms, before permitting entry of a vehicle without search, that an emergency in fact exists and the vehicle seeking entry is legitimately responding to the emergency.

[†]. App. Ex. S-64, p. 3-11. [†]. *Id.* [†]. (*id.* at p. 4-2), [†]. *Id.* at p. 3-11. See also App. Ex. S-62, pp. 3-14, 4-2. [†].[129] [†]. PG&E Panel, fol. Tr. 1584, pp. 30-31. [†]. PG&E Panel, fol. Tr. 1584, p. 31; Miller, fol. Tr. 1911, p. 30. [†]. Miller, fol. Tr. 1911, p. 31. [†]. PG&E Panel, fol. Tr. 1584, p. 31; App. Ex. S-64, p. 4-2.[130]

J. Sufficiency of Applicant's Safeguards System (Consolidated Issue 1)

As established in our initial discussion of the security regulations, the general performance objective of Section 73.55(a) for safeguards systems — to provide high assurance of protection against radiological sabotage — is normally satisfied once the detailed requirements of Sections 73.55(b) through (h) are met. See pp. 59-60, *supra*. Consolidated Issue 1, consisting of subissues (a) through (d), is an extensive statement of assorted challenges to the sufficiency of applicant's safeguards system. We have reviewed the various components of that system and, for the most part, have found them to be adequate. We have also considered a number of legal arguments about the proper characterization of the design basis threat. See pp. 60-71 and 74-77, *supra*. Thus, we have already dealt with many of the matters raised by subissue (c) and need not repeat our findings here. Items still remaining to be considered comprise three topics: first, Chapter 11 of the Security Plan (subissues (a) and (b)), second, the "insider" element of the design basis threat (subissues (c)(iii) and (v)), and third, the applicant's procedure for hostage situations (subissue (d)). We address each topic in turn.

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[129] [†]. App. Ex. S-64, p. 2-1 (emphasis supplied). [†]. See App. Ex. S-63, p. 31.

[130] [†]. (App. Ex. S-64, p. 3-11) [†].

1. Chapter 11 of the Security Plan is entitled "Overall Security Plan Performance." The introductory portion of the chapter declares its purpose to be a demonstration of how the design basis threat of 10 CFR §73.1(a)(1) will be met at Diablo Canyon in order to provide high assurance of protection against successful sabotage. This is followed by a general description of the site and the security system, with emphasis on those aspects of the system designed to detect and assess threats. The final part of Chapter 11 is an outline of three postulated scenarios involving an intruding force, characterized by applicant as "worst case." In each case, the scenario is followed with time sequences to a conclusion in which the armed responding force has "neutralized" the intruders either before a successful act of sabotage is commited, or in time to allow plant operators to prevent an intruder-initiated chain of events from having radiological consequences.[131]

[†].[132]

Case 1

[†].

Case 2

[†].

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[131] In applicant's terms, "neutralization" of an intruder means rendering the intruder incapable of committing radiological sabotage. Medcalf, Tr. 1643.

[132] The cases appearing in Chapter 11 use a code to refer to various vital systems and equipment. The above exposition of these scenarios utilizes portions of the record transcript to augment the description found in Chapter 11. See Tr. 1500-62, 1684-1724, 1748-62; App. Ex. S-64, Chapter 11.

[†].

Subissue (a) of Consolidated Issue 1 challenges the type and magnitude of the threats portrayed in Chapter 11, and subissue (b) questions the adequacy of applicant's threat analysis. Governor Brown's proposed findings, like the testimony of his expert witnesses at the hearing, particularize the alleged inadequacies of applicant's Chapter 11 scenarios. In essence, these findings state that the characteristics and attributes of the potential intruders and the assaults to be expected from them would be more imaginative and severe than those presented by applicant. The findings are also critical of the details presented in the Chapter 11 scenarios.[133] Almost without exception, however, Governor Brown's proposed findings either exceed the design basis threat or misapprehend the purpose of Chapter 11.

Unlike those sections of the Security Plan concerning specific components of the applicant's security system, Chapter 11 is not directly tied to a specific regulatory requirement. Rather, it is a staff-imposed exercise intended to demonstrate that the component parts of the security system are capable of functioning in an integrated fashion in the event of an attack. Rose, fol. Tr. 1893, pp. 3-4; Miller, Tr. 2024. As such, it is a logical extension of the regulatory approach that the general performance objective for the safeguards system is normally satisfied once the detailed requirements for its component parts have been met.

Chapter 11 is the applicant's response to requirements implied in the staff's "Security Plan Evaluation Report Workbook."[134] Rose, fol. Tr. 1893, pp. 3-4. That document indicates how a staff reviewer might assess the adequacy of Chapter 11 by confirming that the security system had been evaluated using "computer models such as EASI, TSO, or . . . manual quantitative techniques." Staff Ex. S-2, p. 11-1. The staff used the EASI analysis as a check of applicant's manual technique. EASI is a simplistic "probabilistic model that combines alarm probabilities, delays of attackers, and response force times to estimate the probability that the response force can intercept the attackers."[135] Rose, fol. Tr. 1893, p. 5. It is concerned only with the time required to intercept the intruders; it does not take into account tactics or the human characteristics of either the attackers or the responders, nor does it address the question of "who wins the battle" once the intruders are intercepted.[136] *Id.*; Tr. 1956-61, 2169-72. The staff considers Chapter 11 to play a small role in the ultimate approval of the Security Plan and in determining the adequacy of the safeguards system to protect the applicant's facility against radiological sabotage.[137] Rose, fol. Tr. 1893, p. 4; Miller, Tr. 2024; Gaskin, Tr. 2176. This is further shown by the fact that Chapter 11 is not even mentioned in the Staff's Security Plan Evaluation Report for Diablo Canyon. See Staff Ex. S-1.

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[133] SLOMFP filed no proposed findings on subissues I(a) and 1(b) *per se*. In addressing the subissues under 1(c), however, intervenor argues that the Chapter 11 scenarios are unrealistic in that the number of intruders considered is too small and that the cases presented there are not the "worst" cases. This is so because they do not include variations on the attack scenarios which could complicate the response and the recovery sequence, or attacks which could be more easily mounted but which might have less severe potential consequences. SLOMFP Proposed Findings at 3-6.

[134] NUREG-0416 (January 1978). Chapter 11 of NUREG-0416 is Staff Ex. S- 2.

[135] See generally Staff Ex. S-3 ("User's Guide for Evaluating Physical Security Capabilities of Nuclear Facilities by the EASI Method," NUREG-0184 (June 1977)).

We conclude that the purpose of Chapter 11 is to show that the various individual parts of the system would function together under attack conditions. It follows therefore that the applicant, preparing Chapter 11 on the staff's instructions with this understanding of its purpose, need not draft a set of scenario analyses detailed and exhaustive enough to provide the type of demonstration Governor Brown and the intervenor seek. It also follows that perceived inadequacies in the Chapter 11 cases and their analysis by the applicant cannot necessarily be translated into inadequacies in the security system.

For example, Governor Brown and SLOMFP suggest findings that the scenarios portrayed in Chapter 11 are not "worst" cases. These parties are apparently applying the modifier "worst" to the nature of the external threat itself. Gov. Proposed Findings at 28-29; SLOMFP Proposed Findings at 4-5. It is clear, however, that in preparing Chapter 11, applicant considered the "worst" that could happen at the plant from the standpoint of the potential consequences of radiological sabotage. Shiffer, Tr. 1499, 1764-5; PG&E Panel, fol. Tr. 1584, pp. 1-2. [†]. See pp. 99-100 [†], *supra*. We conclude that this condition is indeed a worst case as far as radiological sabotage is concerned.

Additional findings proposed by Governor Brown provide a list of possible distortions that might be added to the assault scenarios to make them worse than those considered by the applicant (*e.g.*, diversionary tactics, sniper fire, blocking the access road, and sabotage of other plant components). Other findings state that the response force is not impeded by failures and breakdowns that should be expected in any real life system. Gov. Proposed Findings at 28-29. We agree that these factors and possibly many others, could enhance the severity of an assault. But the assault scenarios described in Chapter 11 permit the intruders to move directly to their primary target.[138] In each case, the chronological sequence of the intrusion begins after the attackers have negotiated the protected area fence without detection and have triggered the [†]. Assessment of the threat is [†]. Medcalf, Tr. 1574, 1788. [†].

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[136] The applicant assumes in its analysis that the responders would win because of their numerical superiority over the intruders. Medcalf, Tr. 1574, 1788.

[137] In his proposed findings, Governor Brown states that applicant's intention for Chapter 11 was to "demonstrate that its security arrangements provide high assurance of protection against the design basis threat." Gov. Proposed Findings at 20. Indeed, one of the purposes of Chapter 11 stated in NUREG-0416 (n. 134, *supra*) is "to demonstrate that the physical security system shall satisfy the general performance requirement." Thus, Governor Brown's interpretation of the goal of Chapter 11 and, hence, the great importance he places on its adequacy, are not entirely unreasonable. We have seen, however, that NUREG-0416 goes on to specify that the intent of the chapter may be satisfied by the use of a simple analytical technique such as EASI (p. 100, *supra*), and that the staff placed little emphasis on Chapter 11 in its review of the security plan. This is entirely consistent with the provisions of Section 73.55(a), which indicate that the general performance objective for security systems is normally satisfied once the requirements of Section 73.55(b) through (h) are met. Governor Brown's interpretation of the purpose of Chapter 11 establishes a much higher standard of acceptability for that portion of the Security Plan, and would seem to require extensive "war gaming" before the plan could be approved by the staff.

Similarly, SLOMFP's proposed findings are critical of the fact that time of day and weather conditions were not taken into account. SLOMFP Proposed Findings at 7-8. In actuality, these factors play no part in the response to the Chapter 11 scenarios. [†]. PG&E Panel, fol. Tr. 1584, pp. 2-3; Rose, Tr. 2182. [†]. Dettman, Tr. 1637-8.

Failures of humans and equipment surely will occur, but they have not been provided for on either side in Chapter 11. Given the redundancy of the communications and intrusion alarm networks (see pp. 88-89, 93-96, *supra*), the guards' training, and their "at home" advantage (Taylor, Tr. 2283), it would appear that random failures, if included in the analyses, would favor the response force rather than the intruders. Similarly, the intruders are undertaking a more complex set of tasks than the responders. The only "real-life" factor which squarely favors the intruders under the terms of the design basis threat is that of surprise, for they know when and how they will attack, and the responders of course do not. But, in light of the Diablo Canyon surveillance systems, the intruders could not confidently rely on achieving surprise. See pp. 95-96 [†], *supra*.

We conclude that Chapter 11 does illustrate the integrated functioning of the security system under attack conditions, and therefore serves its intended purpose. We also find that the scenarios presented there, while neither perfectly realistic nor exhaustive in their consideration of possible attack variations, do not reveal any systematic weaknesses in the integrated functioning of the security system or an inability of that system to provide high assurance of protection against the design basis threat.

2. Subissues 1(c)(iii) and (v) challenge the range of threats posed by an insider and question whether applicant's analysis of those threats is adequate. Like the external threat, the internal threat is delineated by 10 CFR §73.1(a)(1). The design basis insider threat is limited to one employee, although that person is presumed to be knowledgeable about plant activities and may either actively or passively participate in any sabotage attempt.

The applicant's initial protection against an insider is the company's employee screening process applicable to all PG&E operating personnel. That program is designed to ensure that only qualified persons who are physically and mentally suited to work in a nuclear power plant are employed at Diablo Canyon. In addition, all operating personnel receive ongoing performance evaluations consistent with accepted industry standards. App. Ex. S-64, p. 1-2 and Appendix E. The applicant also carefully screens all security force members. We have previously described that screening program and need not repeat it. See p. 83, *supra*.

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[138] [†].

Because no screening program can be totally effective, applicant's security system is designed to minimize the opportunities available to any plant employee to commit radiological sabotage or effectively assist any such sabotage attempts by external intruders. [†]. (see p. 95 [†], *supra*) [†]. (see p. 95 [†], *supra*) all reduce the possibility that a lone insider or one working in concert with external intruders may successfully commit radiological sabotage. Finally, all members of the operating crew as well as security force members are trained to be alert to such things as unauthorized access to plant areas. Fatterson, Tr. 1795-96. Thus, these components of the applicant's security system, combined with all the other parts of the system, ensure adequate protection against the possible range of insider activities at Diablo Canyon.[139] See also n. 125 [†], *supra*.

3. Subissue 1(d) challenges the adequacy of applicant's preparation to deal with situations where individuals are taken hostage by persons threatening the facility. Intervenor SLOMFP's proposed findings of fact, following its witness's testimony at the hearing, state that PG&E has not enunciated a specific hostage policy of non-negotiation at Diablo Canyon. Such a policy is important to put prospective intruders on notice of what they may expect and to eliminate response to hostage situations based on emotional considerations. Taylor, fol. Tr. 2213, pp. 15-17.

Applicant's procedure for dealing with hostage situations, SP-613(S), was marked for identification at the hearing. Tr. 2141.[140] [†]. Robert B. Manili, Tr. 2143-44. [†]. Shifter, Lunsford, and Patterson, Tr. 2880-82. [†]. *Id.* [†]. Gaskins, Tr. 2149.

[†]. We conclude that applicant's security procedure, although not expressed in the security plan itself,[141] forms an effective and reasonable policy for the hostage situation.

K. Staff [†] in the Number of Armed Responders

Section 73.55(h)(3) of the Commission's regulations states that

> [t]he total number of guards, and armed, trained personnel immediately available at the facility . . . shall nominally be ten (10), unless specifically

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[139] Although the scenarios employing an insider set forth by applicant in Chapter 11 of the security plan do not encompass all possible insider actions, these scenarios are representative of the actions of both a knowledgeable passive insider without access to vital areas and the actions of a knowledgeable active insider with access to vital areas assisting the external attackers. App. Ex. S-64, pp. 11-4 to 11-7.

[140] See Gov. Ex. S-7.

[141] [†]. (App. Ex. S-63, p. 16) [†].

> required otherwise on a case by case basis by the Commission; however, this number may not be reduced to less than five (5) guards.

In the statement of considerations accompanying the regulations, the Commission explained that it would evaluate a number of factors in determining whether a particular security force would be required to have more or less than the nominal number of ten guards; and these factors represent one instance in the security regulations where site-specific features are to be taken into account. The Commission then listed the following eleven items:

> (a) selection, training and motivation of response force; (b) availability and construction of defensive positions; (c) availability and knowledge of weapons and other equipment; (d) individual site considerations, including size, topography, configuration, geography, weather, and number of nuclear power plant units; (e) location and reliability of initial detection devices; (f) consideration of Local Law Enforcement Agencies' response; (g) vital area hardening, including plant design, location of and access control to vital areas; (h) design and construction of protected area barriers; (i) redundancy of security systems; (j) initial clearance and continuing reliability assessment of personnel; and (k) security and contingency procedures.[142]

In other words, the regulations mandate ten armed responders in every case unless a staff evaluation applying these eleven factors to a plant and its security system and organization affirmatively establishes that a lesser number is adequate or a greater number is necessary.

Governor Brown posits proposed findings that the staff [†] armed responders at Diablo Canyon is unwarranted on the present record. Gov. Proposed Findings at 63-69. The staff's proposed findings gloss over this issue and assert that the question of the size of the armed response force at Diablo Canyon is beyond the scope of any of the consolidated issues. Staff Proposed Findings at 12, n.7. Interestingly, however, the staff took the opposite position at the hearing. There the staff introduced direct testimony on Consolidated Issue 1(c)(i) attempting to [†] armed responders at applicant's facility. Miller, fol. Tr. 1911, p. 10-11.[143]

Contrary to the staff's assertion in its proposed findings, the size of the armed response force at Diablo Canyon is a vital part of the "safeguard systems" as that term is used in Consolidated Issue 1(c). Accordingly, the [†] armed responders at applicant's facility is squarely within the scope of that issue. Because 10 CFR §73.55(h)(3) reserves to the Commission the decision, on a case by case basis, to increase or decrease the number of armed responders at a power reactor, the staff (as the Commission's delegate initially exercising this judgment) had the burden of going forward once the issue was raised by Consolidated Issue 1(c).[144] Here, however, the evidence of record is inadequate to justify the staff's authorization of a [†] armed response force.

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[142] 42 *Fed. Reg.* 10836, 10837 (February 24, 1977).

[143] The staff's stated purpose for this portion of the direct testimony was to demonstrate that the applicant had prepared to meet the design basis threat by meeting the requirements of 10 CFR §73.55(b)-(h) or, alternatively, by providing equivalent protection where any particular requirement was not followed. The staff identified its [†] armed responders as one area where applicant did not meet the regulatory requirements and then sought to justify this [†]. Miller, fol. Tr. 1911, pp. 8-11. The staff's sanctioning of [†] armed responders was explored on cross-examination of the staff's witness by both intervenor SLOMFP and Governor Brown without objection by the staff. Tr. 2040-42, 2110-15.

In its direct testimony, the staff sought [†] armed responders in consideration of only four of the factors cited by the Commission: "the rugged terrain, the exceptional response time of the on-site response force to reach any position in the protected area, the reliability of the detection systems and the training received by the response force, including their knowledge of the plant layout . . . ." Miller, fol. Tr. 1911, pp. 10-11. The recitation of these factors, without more explanation, is not sufficient to [†] applicant's armed response force.

Once a design basis assault on the facility is under way, the terrain would have little pertinence to the ability of the armed responders to repel the attack. Miller, Tr. 2111. On the other hand, the hilly terrain, especially that directly to the east of the facility, might prove advantageous to potential adversaries by providing the classic military high ground as well as an excellent intelligence gathering vantage point. Giuffrida, Tr. 2432-33, 2755-57. Further, we cannot give much credence to the staff's position that the rocky terrain at the site perimeter handicaps intruders because it is "very easy to turn an ankle in that type material; wherein the guard force would not be coming over that type material." Miller, Tr. 2111.

The staff relied on the exceptional response time of the applicant's security force to reach any portion of the protected area, but was unable to explain why the response time at Diablo Canyon was any better than at any other nuclear facility and thus exceptional. Miller, Tr. 2041-42. Moreover, the staff's reliance on response times makes no mention of the fact that there are [†] at Diablo Canyon. [†]. Similarly, we are left to speculate why the staff cited the reliability of the detection systems at Diablo Canyon. Although the [†] network and the other systems augmenting it meet the staff's regulatory guide standards and were specifically selected by applicant for their low false alarm rates (PG&E Panel, fol. Tr. 1584, p. 25), we have not been informed of anything exceptional about the applicant's system relative to the detection systems at other facilities.

The staff's reliance on the training of applicant's security force is also tenuous. At the time of the hearing the staff had considered only the applicant's Regulatory

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[144] The applicant proposed no findings of fact on this issue and even ignored it in responding to Governor Brown's findings.

Guide 5.20 training program — a program which we have found inadequate in the face of the design basis threat of 10 CFR §73.1(a)(1). See p. 86, *supra*. Thus, at that training level, we cannot accept the staff's dependence on training to [†] applicant's response force.

The staff also offered into evidence its Security Plan Evaluation Report (SPER) for Diablo Canyon. Staff Ex. S-1. That report states the staff's conclusion that [†] armed responders are sufficient to provide high assurance protection. *Id.* at 5-6. Instead of analyzing applicant's facility in light of the eleven factors identified by the Commission, however, the SPER merely lists ten of the eleven factors.[145] It then states that a "review of the factors above and principally, the size of the site, the construction of the vital areas, and the response capability of Local Law Enforcement Agencies . . ." led the staff to [†] armed responders. *Id.* at 6.[146] The SPER does not explain how any of the ten factors influenced the staff's determinations. We are not informed how the size of the applicant's site weighed in the staff's judgment, but note that the large uninhabited area of the plant site and beyond would seem to give rise to the possibility of an adversarial force gathering near the site without being detected. Giuffrida, Tr. 2553-54. Similarly, we must guess as to what vital area construction features the staff relied upon to reach its judgment, and why those features are important. There is little in the record to suggest that there is anything unique about the construction of Diablo Canyon that would offer an unusual advantage to the armed responder force, and the staff has certainly not pointed to any such evidence.

The third factor mentioned in the SPER is the response capability of the local law enforcement agencies. Again, there is no explanation of how LLEA response would warrant a reduction in guard force size. We have found the response commitments of LLEA to be adequate. See pp. 91, 93, *supra*. The fact remains, however, that the Diablo Canyon plant is seven miles from the nearest county road at Avila Gate[147] and from that gate it is at least as far again to the nearest LLEA facility.[148] Applicant has given the initial LLEA response time to be [†] a value we believe is optimistic based on the geography of the area and the type of roads involved.[149] Also, this estimate takes no account of adverse weather conditions. Lunsford, Tr. 1569-70. Finally, the record makes clear that it is the guard force that must meet and neutralize any intruding force and that the staff gives no credit for assistance by the LLEA in protecting against acts of sabotage. See p. 93, *supra*. Given these facts together with the isolated location of the plant, we fail to see how the LLEA response factor favorably influenced the staff's decision [†] armed response force.[150]

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[145] The SPER makes no mention of the second factor listed by the Commission (see p. 99, *supra*) concerning availability and construction of defensive positions.

[146] [†]. App. Ex. S-64, Appendix A, p. A-5.

[147] App. Ex. S-62, p. 2-1.

[148] App. Ex. S-62, Appendix B.

[149] [†]. App. Exhibit S-62, Appendix B. No actual tests of this response have been made by applicant. Lunsford, Medcalf and Dettman, Tr. 1831-32.

Indeed, the company also recognizes the optimistic nature of this [†] for in its manual prepared for distribution to LLEA personnel it states: "The response time for personnel from the [†] will vary, depending on the location of the units, but in no case should exceed [†] from the time the call is placed until they are on site." Gov. Ex. S-1, Preface.

As the Commission's delegate, the staff has the authority to change the size of the armed responder force, up or down, from the nominal value of 10. This must be done after an analysis of the applicant's facility in light of the factors identified by the Commission. Although two different sets of factors have been cited by the staff as providing justification for requiring [†] armed responders at Diablo Canyon, the record analysis in support of these factors is insufficient. It may well be that a force of [†] armed responders is adequate, but the staff simply has not made a case for such [†]. Until such time as the staff can adequately and convincingly demonstrate to the Director of Nuclear Reactor Regulation that the size of the armed response force at Diablo Canyon should be [†] must be required.[151]

V. CONCLUSION

Based on our review of the entire record in this proceeding and upon the foregoing factual and legal determinations, and subject to the conditions and exceptions noted herein, we conclude that the applicant's security plan conforms with all applicable provisions of the Atomic Energy Act of 1954, as amended, and the Commission's security regulations. Specifically, the applicant's physical protection system and security organization are adequate to meet the design basis threat of radiological sabotage and provide high assurance that activities involving special nuclear material at Diablo Canyon will not be inimical to the common defense and security and will not constitute an unreasonable risk to the public health and safety.

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[150] [†]. App. Ex. S-62, p. 1-12. With the exception of the last, applicant's justifications are the same as those given by the staff and therefore would provide no support for the staff's decision. The applicant's reliance on its safeguards contingency procedures would not, standing alone, provide a [†] armed responders from the nominal ten. In any event, the staff did not and could not point to this factor in [†] in the Diablo Canyon response force. Because the applicant's detailed procedures are not submitted to the staff as part of the contingency plan, the staff witnesses at the hearing repeatedly indicated it was the responsibility of the Inspection and Enforcement Division staff to ensure the adequacy of such procedures. It would have been anomalous for the NRR staff, on the one hand, to have disclaimed responsibility for reviewing such procedures and, on the other, relied upon such procedures to support its determination [†] applicant's armed response force.

Revision 10 of applicant's security plan does not reiterate the justification set forth in Revision 9 for employing [†] response force personnel.

[151] Inasmuch as the additional trained armed responders may not be available immediately, during the pendency of the fuel loading and low power testing license (*i.e.*, prior to full power operation) the applicant may operate with a [†] response force if it can provide, through alternative measures acceptable to the Director, a force equivalent to [†] trained armed responders.

The applicant must complete its Appendix B training and qualification plan prior to full power operation and its operating license must be conditioned accordingly. See pp. 86-88, *supra*. In addition, applicant must employ [†] armed responders at Diablo Canyon unless or until the staff adequately justifies to the Director of Nuclear Reactor Regulation a [†] in that number. See p. 107 [†], *supra*.[152]

Any proposed findings of fact or conclusions of law not adopted herein are either rejected or are immaterial to our decision. Within 15 days after service of this decision, any party may file a petition for review with the Commission pursuant to 10 CFR §2.786(b). Any other party may, within 10 days after service of a petition for review, file an answer opposing Commission review. Effectiveness of this decision will be determined by the Commission pursuant to 10 CFR §2.764 in conjunction with its effectiveness review of LBP-81-21, 14 NRC 107 (1981).[153]

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

The Appendix has been deleted from this publication but can be found in the NRC Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.

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[152] Finally, we wish to reiterate our recommendations that applicant clarify its security plan concerning escorts for vehicles entering the protected area (see n.130 [†], *supra*) and develop procedures to utilize the assessment capabilities of its computer system to provide additional protection against the insider threat (see n.125 [†], *supra*).

[153] See the Commission's Order of July 22, 1981.

Cite as 16 NRC 109 (1982) **CLI-82-20**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-358**

CINCINNATI GAS AND ELECTRIC COMPANY, *et al.*
(Wm. H. Zimmer Nuclear Power Station, Unit No. 1)

July 30, 1982

The Commission directs the Licensing Board to dismiss certain contentions from this operating license proceeding which the Board admitted as Board issues pursuant to its *sua sponte* authority under 10 CFR 2.760a.

LICENSING BOARDS: REOPENING OF PROCEEDINGS (NEW CONTENTIONS)

After the record is closed in an operating license proceeding, where parties proffering new contentions do not meet the legal standards for further hearings, that the contentions raise serious issues is insufficient justification to reopen the record to consider them as Board issues when they are being dealt with in the course of ongoing NRC investigation and staff monitoring.

ORDER

On July 15, 1982 the Atomic Safety and Licensing Board presiding in this proceeding issued a Memorandum and Order (LBP-82-54, 16 NRC 210) in which it exercised its *sua sponte* authority under 10 CFR §2.760a to admit as Board issues eight new contentions. These contentions generally relate to the status of quality assurance pertaining to the construction of the Zimmer Station and the corporate character and competence of the lead applicant to operate a nuclear generating station. The Board, noting that the NRC staff supported a hearing on the eight contentions, found that "the proposed contentions raise issues which are indeed serious" (*Id.* at 214).

The Commission agrees with the Board that issues outlined in the contentions are indeed serious. The Commission has already indicated that it assigns great importance to the investigation of quality assurance conditions at the Zimmer plant. On June 7, 1982, the Commission was briefed by the Administrator of Region III, Mr. Keppler, on the status of the investigation. On June 16, the Commission held a public meeting with representatives of the lead applicant to allow them to brief the Commission on ongoing quality assurance matters related to the Zimmer project. The Commission also heard from representatives of the Government Accountability Project, which has been involved as counsel for some who maintain a concern about the status of the Zimmer project. The Commission has directed the NRC staff that it wishes to be kept fully informed in order that it can provide guidance and direction when needed.

The NRC has been investigating alleged quality assurance irregularities at Zimmer since January 1981. The investigations are still ongoing. The investigations have identified a number of quality assurance-related problems at the Zimmer site. An extensive review of the as-built plant is currently being performed. Before the plant can be licensed, a comprehensive quality confirmation program will have to be conducted and identified problem areas resolved. By itself, without factoring in any rework, the quality confirmation program will be both costly and time-consuming. The effect of this on the construction schedule of the plant remains to be determined.

The basis for the eight contentions which the Board has accepted as Board issues is simply a repetition of some of the problems revealed in the reports of the investigations which have already been released to the public. The Miami Valley Power Project (MVPP), an Intervenor, which filed an untimely request with the Board that these issues be considered, suggested that it had new information on these matters. MVPP did not in its motion to the Board or elsewhere sufficiently identify any new information, its source, or say when it became available. The NRC staff supported the motion to reopen. However, the staff recognized and the Board ruled that the legal standards for further hearings were not met.

As we have indicated above, the issues raised in the eight contentions are being dealt with in the course of the ongoing investigation and in the NRC staff's monitoring of the applicants' Quality Confirmation Program.

For these reasons, the Commission concludes that the Board has not set forth a sufficient justification supporting its order reopening the hearing record to consider the eight contentions as Board issues. Accordingly, the Board is directed to issue an appropriate order dismissing the eight contentions from the proceeding. Commissioners Gilinsky and Asselstine dissent from this decision. The separate views of individual Commissioners will follow.

It is so ORDERED.*

For the Commission

John C. Hoyle
Acting Secretary of the Commission

Dated at Washington, D.C.,
the 30th day of July, 1982.

SEPARATE VIEWS OF CHAIRMAN PALLADINO

I do not agree with Commissioner Asselstine's statement of reasons, concluding that the eight contentions should be pursued through further hearings. Further, I am particularly distressed by what he characterizes as the "serious and unfortunate consequences" of our decisions.

I would stress the detailed independent investigation that is ongoing at Zimmer. This is how facts are ascertained in most issues involving continuing allegations. Our intent is not only to determine the facts but to see that corrective actions are taken where the facts show such actions are needed.

Commissioner Asselstine argues that our decision "denies the public an opportunity to participate further in our regulatory process on these significant safety matters." Dissenting Opinion of Commissioner Asselstine at 118, *infra*. I do not understand this statement.

The very basis of *sua sponte* authority is to permit Boards to address issues which the parties to a proceeding have *not* properly raised. In this case, the Board itself concluded that further public participation (*i.e.*, further hearings) could not be justified on the basis of the applicable legal standards. If our *sua sponte* decision is to be judged as lacking because it does not foster public participation, then our legal standards which govern such participation lose their content, and the public is erroneously led to believe that its rights have been unfairly restricted.

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*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

Commissioner Asselstine also argues that our decision may eliminate *sua sponte* authority for the Boards. *Id.* at 118. This was not my intent. Decisive for me was the level of staff and Commission involvement in the Zimmer quality assurance problems which predated the eight contentions that were advanced by the intervenor in this case.

Finally, Commissioner Asselstine argues that the Boards will interpret our decision as a repudiation and, perhaps, as a criticism. *Id.* at 119. I would hope that the Boards would reject immediately this view of our decision. Just as the Board attempts in each case to render correct decisions, so does the Commission, and the Commission's disagreement with the Board decision in this case is not intended to carry implications for other cases, as for example, where the facts about investigations underway are different.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

The quality assurance problems at the Zimmer site require thorough investigation and must be remedied before this plant can qualify for a license to operate. In principle, this inquiry could be conducted either by the NRC staff, acting alone, or by means of an adjudicatory proceeding before the Licensing Board. In practice, however, and especially in view of the history of this project, the adjudicatory proceeding proposed by the Licensing Board is important for assuring a thorough investigation of the breakdown in quality assurance. Although this is not the most efficient means of handling this matter, it will be needed until the Commission and the NRC staff deal with quality assurance more effectively.

ADDITIONAL VIEWS OF COMMISSIONERS AHEARNE AND ROBERTS

We strongly support this order but, being convinced it will be misinterpreted, we believe a few words of explanation are needed. The heart of this order and this issue is the question of the appropriate roles of the Boards and of the NRC staff in the regulation of nuclear power.

Both the staff and Board favored reopening the record because of special circumstances, although both agreed the intervenor had not met whatever burden is appropriate. (In particular, the intervenor did not appear to have any good reason for raising the issues at this late date. The primary basis for the intervenor's motion is work done by the staff and applicant which has been available for some time.)

As explained by the staff:

> "[T]here are special circumstances in this case which cause the Staff to support reopening the record. The safety issue which MVPP has raised is a most serious one. It is an issue which must be explored in sufficient depth to permit a confident judgment on it before reactor operation is licensed.
>
> . . .
>
> ". . . [T]he breakdown in the Applicants' quality assurance program which has resulted in construction defects, and which, in the course of the ongoing investigation, may result in the discovery of more construction defects at the Zimmer plant raises a serious safety question. The information regarding the extent of the construction defects has the potential for resulting in the possible denial of an operating license."[1]

As explained by the Board:

> "[A]s we have noted, this state of affairs is not ordinary. As Staff points out, the proposed contentions raise issues which are indeed serious. A decision adverse to Applicants could dictate the denial of an operating license. The Staff has identified Zimmer as a plant with a serious quality assurance breakdown. (Testimony of William J. Dircks before the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, U.S. House of Representatives, November 19, 1981.) Fines have been imposed by Staff and paid with respect to this breakdown. The Commissioners were recently briefed on this situation by Applicants and MVPP, indicating the continuing concern about the matter."[2]

We can agree with the serious nature of the quality assurance issue at Zimmer. That is why there have been continuing staff investigations and review, and that is why the Commissioners have shown a "continuing concern." However, we do not agree that these circumstances by themselves justify holding a hearing.

The staff argued:

> "The earlier finding of a breakdown in the Applicant's quality assurance program reached in the Region III investigation has been widely disseminated in the Cincinnati area. The public interest in having this serious safety issue litigated in the open and thereby affording the public the opportunity to be fully apprised on the matter warrants the exercise of the Board's discretion to reopen the record."[3]

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[1] "NRC Staff Response to Miami Valley Power Project Motion for Leave to File Contentions" at 4-5 (June 11, 1982).

[2] "Memorandum and Order (MVPP's Motion for Leave to File New Contentions)," LBP-82-54, 16 NRC 214 (1982).

[3] NRC Staff Response at 5. Commissioner Asselstine states the review by the Commissioners and the staff "can benefit from the searching review and resolution of these factual disputes that can result from a formal adjudicatory proceeding. Indeed, the NRC staff itself recognized as much. . . ." The staff does not appear to be arguing that the review would be benefited, rather there is a "public interest" in litigating for the benefit of the public.

However, we do not agree it is appropriate to hold a *hearing* simply to inform the public. First, it is not a very effective way of informing the general public. Second, it is a very costly way to achieve an objective that can be met by holding more informal public meetings.

The Board found:

> "[W]e agree with the Staff's assessment that the public interest requires reopening of the record to litigate these contentions. We believe that this consideration overrides legal niceties pertaining to acceptance of untimely contentions and reopening of records. Consequently, we are exercising our authority pursuant to 10 CFR §2.718(j) and 2.760a to reopen the record and admit the eight contentions advanced by MVPP as Board-raised issues. . . .
>
> ". . . [W]e believe that a full public airing of this matter will not only contribute to public confidence, but will also strengthen the QA program. Subjecting this program to the scrutiny of the Commission's adjudicatory process can only contribute, not detract, to reasonable assurance that the public health and safety will be protected.[4]

We disagree with the Board — not because of "legal niceties" but because of our views on the proper role of the Board and of the staff. We believe the primary role of the Board is to adjudicate issues in dispute raised in the hearing process. We do not believe the role of the Board is to address as a technical review body every potential problem. The large technical staff of the NRC is charged with reviewing, monitoring, inspecting and enforcing actions for nuclear power reactors. The taxpayer provides a very large amount of funds (over $450 million per year) to support over 3000 staff members of the NRC whose primary function is to insure that the health and safety of the public are protected in the use of commercial nuclear power.

In a case like this where serious issues have been raised with regard to a plant involved in the review process for an operating license, the NRC staff devotes a large amount of time and effort to resolving those issues. Region III is doing that. The Commission itself has become heavily involved, receiving numerous briefings on the case and providing substantive guidance to the Region. This is as it should be. The allegations will be fully addressed and the appropriate and necessary action taken. A Board is not needed in this case.

Consequently, we do not believe that reopening the hearing at this late date to address these contentions is the right use of NRC resources.

In response to Commissioner Asselstine's comments, we appear to have some fundamental differences in approach as well as a clear difference of opinion as to the roles of the Board and staff. First, we believe the hearing process was never intended to be a continuing, open-ended forum for public participation. In this decision the Commission was dealing with participation by an intervenor, not the public as a whole, under circumstances in which the Board found the intervenor was both untimely in raising the issues and had no excuse for being untimely.[5] Second, Commissioner Asselstine concludes "a full airing of these issues in the hearing would likely strengthen the QA program and would contribute to reasonable assurance that the public health and safety will be protected" and that adjudicatory hearings would be a "particularly effective means" of resolving the QA issue. This judgment has been and continues to be subject to considerable debate. We continue to believe formal legal procedures add little to the effectiveness of the review of technical issues. Perhaps as a lawyer Commissioner Asselstine places a higher value on the legal process.[6]

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[4] LBP-82-54, 16 NRC 214 (1982). The Board also found it significant that the staff asserted the need for a hearing.

DISSENTING OPINION OF COMMISSIONER ASSELSTINE

In general, I believe that the most useful and effective role to be served by our adjudicatory licensing hearings is to resolve those issues that are properly in controversy between the parties to the proceeding. I therefore do not view our Atomic Safety and Licensing Boards as a separate layer of technical review over all questions that may arise with respect to a particular application. For this reason, I support Commission review of decisions by our Licensing Boards to exercise their *sua sponte* authority pursuant to 10 CFR section 2.760a — the authority to admit contentions to be addressed in the hearing that have not been properly raised by a party to the proceeding if the Board determines that a serious safety, environmental, or common defense and security matter exists.

However, I strongly disagree with the conclusion of the majority of the Commission in this case that the Board has not set forth a sufficient justification supporting its order reopening the hearing record to consider as Board issues the eight contentions proposed by the Miami Valley Power Project (MVPP), an intervenor in this proceeding. For the reasons set forth in detail below, I believe that the Board and the NRC staff were correct in their judgment that "the public interest requires reopening of the record to litigate these contentions." (LBP-82-54, 16 NRC 214 (1982)). In particular, I believe that this is a case in which the Commission would benefit greatly from the full airing of these eight contentions in this adjudicatory hearing. I therefore would have allowed the Board to reopen the proceeding and to pursue as Board issues the eight contentions proposed by MVPP relating to the quality assurance (QA) situation at the Zimmer Nuclear Power Station, Unit 1.

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[5] This is not a case in which the staff was reluctant to bring the issue to the attention of the Board and parties. The NRC staff kept the Board and parties informed of its concerns through Board Notifications beginning at least as early as July 1981 (BN-81-41 concerning an Immediate Action Letter issued by the staff regarding Zimmer QA practices).

[6] Commissioner Roberts would note, however, the statement of Judge Marvin E. Frankel:

> "That the adversary technique is useful within limits none will doubt. That it is 'best' we should all doubt if we were able to be objective about the question. Despite our untested statements of self-congratulation, we know that others searching after facts — in history, geography, medicine, whatever — do not emulate our adversary system. We know that most countries of the world seek justice by different routes. What is much more to the point, we know that many of the rules and devices of adversary litigation as we conduct it are not geared for, but are often aptly suited to defeat, the development of the truth."

M. Frankel, *The Search for Truth: An Umpireal View*, 123 U.Pa.L.Rev. 1031, 1037 (1975).

There are five reasons for my conclusion that the Board should have been allowed to pursue these eight contentions in this proceeding. First, from the standpoint of the public health and safety, these contentions related to the Zimmer construction quality assurance program are particularly significant. The NRC staff itself, in supporting reopening the record of the proceeding to consider these eight contentions, stated:

> The safety issue which MVPP has raised is a most serious one. It is an issue which must be explored in sufficient depth to permit a confident judgment on it before reactor operation is licensed. NRC Staff Response to MVPP Motion for Leave to File Contentions, pp. 4-5.

In addition, James G. Keppler, our Regional Administrator for the region in which the Zimmer plant is located, testified on June 10, 1982, before the House Interior and Insular Affairs Committee that:

> By the end of March 1981 we determined that there was a serious breakdown in the controls for assuring quality at Zimmer. At that time serious consideration was given to suspending construction activities.

As these and other statements by the Commission and the NRC staff make clear, the quality assurance breakdown at the Zimmer plant, the adequacy of the corrective measures being taken by the applicant, and the implications of the QA situation at Zimmer for the Commission's decision on whether to issue an operating license for the plant, are all serious safety matters that deserve the most careful attention.

Second, the eight contentions contain clear issues of fact that are in dispute between the parties to the proceeding and that have not yet been resolved by the Commission or the NRC staff. These issues include: whether the plant has been constructed in conformance with the Commission's regulations; whether the applicant's quality assurance program is sufficient to identify and correct construction deficiencies for the plant; whether the applicant's Quality Confirmation Program is adequate to address the quality assurance breakdown at Zimmer, and whether the applicant possesses the necessary qualifications and competence to operate the plant safely.

In that regard, this case is far different from the usual *sua sponte* case in which the Board elects to raise issues of interest to the Board that have not been proposed by any party. Here, the eight contentions were first advanced by a party to the proceeding and were only admitted as *Board* issues pursuant to 10 CFR section 2.760a when the Board concluded that MVPP had failed to show good cause for not raising these issues earlier in the proceeding. The strong interest and involvement of the parties in these issues argues for approval of the Board's action in this case.

Third, I believe that the Commission would benefit from having these issues addressed by the Board and by the parties through our adjudicatory process. Ultimately, the Commission must rule on each of the issues raised by the MVPP contentions. I agree with the Board that a full airing of these issues in the hearing would likely strengthen the QA program and would contribute to reasonable assurance that the public health and safety will be protected. (LBP-82-54, 16 NRC 214 (1982)). Adjudicatory hearings, through the use of discovery, the presentation of prepared testimony and the conduct of cross-examination, can serve as a particularly effective means for resolving the complex factual disputes that exist with respect to the Zimmer quality assurance situation. More informal review by the Commissioners, and even the dedicated efforts of the NRC staff to address the Zimmer QA breakdown, which I strongly support, can benefit from the searching review and resolution of these factual disputes that can result from a formal adjudicatory proceeding. Indeed, the NRC staff itself recognized as much and strongly supported the Board's reopening of the proceeding to address these contentions. The record that would be produced by such a hearing would be of great value to the Commission in reaching its decision on whether to issue an operating license in this case.

Fourth, I believe the public participants in this proceeding deserve an opportunity to have these issues addressed in the hearing — to present their evidence and to test the sufficiency of the evidence presented by the other parties. I believe that opportunity is particularly important in this case given the fact that the failure on the part of the NRC staff to identify the breakdown of the applicant's quality assurance program earlier in the construction process raises questions regarding the adequacy of our own regulatory program for construction quality assurance. If, in the circumstances of this case, the public participants are not given an opportunity to raise serious safety issues such as these, then it is difficult to conclude that they have been given a meaningful opportunity to participate in the proceeding.

Finally, I believe that the Board's decision to reopen the proceeding would probably not lead to delay in a Commission decision on whether to issue an operating license in this case. A full airing of these issues in the hearing may well produce information that will assist the Commission in reaching a decision. In addition, as the Commission has noted in its most recent report to Congressman Bevill, it appears to the Commission that the applicant's construction completion projection for this plant is overly optimistic, and it is doubtful that work on the Zimmer plant will be sufficiently complete by December 1982 to permit a Commission decision on whether to issue a full-power license. (July 30, 1982, letter to Congressman Bevill, Table 1, fn. 16).

For the foregoing reasons, I disagree with the majority's conclusion that the Board has not set forth a sufficient justification supporting its order to reopen the hearing record to consider the eight contentions as Board issues.

Apart from these considerations, I believe the majority's decision has several serious and unfortunate consequences regarding public participation in our proceedings, the future of any *sua sponte* authority by our Licensing Boards, and the effective functioning of the Boards. With regard to public participation, the majority's decision effectively denies the public an opportunity to participate further in our regulatory process on these significant safety matters. For years, we have heard the charge that the Commission's regulatory process denies members of the public the opportunity to raise and to have resolved in the Commission's licensing hearings important safety questions. One unfortunate consequence of the majority's decision is that it lends at least some validity to that claim. Indeed, stripped to its barest essentials, the majority's ruling stands for the proposition that these serious safety issues should not be addressed by our public hearings and instead should be left to the NRC staff and the Commission for resolution. The majority's attitude that the public must simply trust in the agency's ability to address the Zimmer quality assurance breakdown, particularly given the past failings of our own regulatory program in identifying these quality assurance problems, cannot help but breed public mistrust of the agency. This public mistrust is dangerous for both the NRC and the industry it regulates. For, if the public lacks confidence in the fundamental fairness of our hearing process, it cannot help but question the adequacy of our regulatory program and the safety of the activities we regulate.

The majority's decision also has serious implications for the future use of *sua sponte* authority by our Licensing Boards. If the Commission will not countenance the Board's exercise of *sua sponte* authority in this case, where the issues involve serious safety matters, where those issues constitute factual disputes between the parties, and where the potential for delay is limited, it is difficult to conceive of a case in which the Commission majority *would* approve a Board's use of *sua sponte* authority. Thus, the majority's ruling may well eliminate, for all practical purposes, the *sua sponte* authority of the Boards.

Finally, I believe that the majority's decision will have unfortunate and profound consequences for the future operation of our Licensing Boards. This is the second decision by this Commission majority in as many weeks to constitute a direct repudiation of the actions of our Boards. Over the years, there has been considerable criticism of the quality and effectiveness of our Licensing Boards. In large part, I believe this criticism reflects a lack of appreciation for the difficulty of their task. Actions by the Commission, such as that taken by the majority in this case, will only add to this difficulty and will hardly foster further improvement in the performance of our Boards. Given these unfortunate consequences, as well as the reasons set forth above, I would have allowed the Board to pursue the eight contentions proposed by MVPP in this case.

Atomic Safety and Licensing Appeal Boards Issuances

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Vice Chairman
Dr. Lawrence R. Quarles
Dr. W. Reed Johnson
Thomas S. Moore
Christine N. Kohl
Stephen F. Eilperin
Gary J. Edles
Dr. Reginald L. Gotchy
Howard A. Wilber

APPEAL BOARDS

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Cite as 16 NRC 121 (1982) **ALAB-679**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. W. Reed Johnson
Gary J. Edles

In the Matter of **Docket No. 50-201-OLA**

NUCLEAR FUEL SERVICES, INC.
and NEW YORK STATE ENERGY
RESEARCH AND DEVELOPMENT
AUTHORITY
(Western New York Nuclear
Service Center)

July 8, 1982

The Appeal Board affirms a Licensing Board order (LBP-82-36, 15 NRC 1075 (1982)) denying an intervenor's request for a hearing on an amendment to the operating license for a spent fuel reprocessing and waste disposal center in light of special statutory provisions governing administration of the center (the amendment had set conditions for the termination of the co-licensee's responsibilities).

RULES OF PRACTICE: HEARING (AMICUS CURIAE)

The Appeal Board will allow amicus participation in a hearing where the Board believes it will assist resolution of the issues and will not prejudice the rights of the parties. See, *e.g.*, *Consumers Power Company* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, n.2 (1981).

NRC: AUTHORITY (HEARING UNDER WEST VALLEY DEMONSTRATION ACT)

Under the West Valley Demonstration Project Act, Pub. L. No. 96-368, 94 Stat. 1347 (1980), the Commission's review of the Department of Energy's (DOE's) demonstration waste solidification plan at West Valley is limited to informal, consultative procedures; the Commission cannot therefore explore DOE's administration of the waste solidification project in a formal evidentiary hearing.

APPEARANCES

Dr. Irwin D. J. Bross, Buffalo, New York, *pro se*.

Messrs. Carmine J. Clemente and **Howard A. Jack,** Albany, New York, for licensee New York State Energy Research and Development Authority.

Messrs. George L. Edgar and **O. S. Hiestand,** Washington, D.C., for licensee Nuclear Fuel Services, Inc.

Mr. Warren E. Bergholz, Jr., Washington, D.C., for *amicus curiae* United States Department of Energy.

Mr. James R. Wolf for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

I. BACKGROUND

This case involves an appeal by Dr. Irwin D. J. Bross of a Licensing Board decision denying his request for a hearing on an amendment to the operating license for the Western New York Nuclear Service Center.

Nuclear Fuel Services, Inc. (NFS) and the New York State Energy Research and Development Authority (the State) are co-licensees under a license issued in 1966 by the Atomic Energy Commission for the operation of a spent nuclear fuel reprocessing and radioactive waste disposal center in West Valley, New York. In general, the State is licensed as owner and lessor of the site and NFS is licensed to operate the facility and possess radioactive materials and waste. The co-licensees' rights and obligations *vis-a-vis* one another are set forth in a lease and other agreements.[1]

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[1] The initial term of the lease between the State and NFS expired on December 31, 1980.

Reprocessing activities at West Valley were suspended in 1972 but substantial quantities of liquid high-level radioactive waste remained at the site. By 1976 NFS had decided to withdraw from the reprocessing business and indicated its intention to turn over the facility to the State. Pursuant to the license, however, NFS remained responsible for assuring that the terms of the license were observed until appropriate amendments reflecting the future responsibilities of the co-licensees were obtained. Because of continuing disputes between the co-licensees, no such amendments were sought and the high-level waste remained at West Valley. The State turned to the Federal government for assistance.[2]

To assist the waste disposal effort, Congress in 1980 enacted the West Valley Demonstration Project Act, Pub. L. No. 96-368, 94 Stat. 1347 (1980), authorizing the Department of Energy (DOE) to carry out a demonstration project involving solidification techniques. To this end, the Act provides that the State will make available to DOE the necessary facilities and high-level waste for completion of the project. It further requires that the State and DOE jointly seek from the NRC a license amendment authorizing the transfer of the facilities. Before undertaking the project, the Act requires DOE to develop a plan for solidification, waste removal, and decontamination, and to submit that plan to the NRC for review. DOE must (i) publish the plan in the Federal Register for public inspection, (ii) publish a notice of the receipt of the NRC's comments and make those comments available for public inspection, and, (iii) publish an explanation in the event DOE rejects any revisions the NRC might suggest. Review of the plan "shall be conducted informally by the Commission and shall not include nor require formal procedures or actions by the Commission pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, or any other law."[3] In addition, the statute requires DOE to hold public hearings in the vicinity of the center to inform the local residents about the project and entertain their comments. Lastly, the Act requires DOE to prepare environmental impact analyses in accordance with the requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321.

The instant case involves two license amendments designed to permit the transfer of control of the center to DOE and to resolve the outstanding disputes between the State and NFS. The first amendment — so-called Change 31 — was jointly sought by the State and DOE to authorize the transfer of the West Valley facility to DOE, subject to certain conditions. Under Change 31, DOE is to have exclusive possession until the licensees reacquire the facility at the completion of the project.

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[2] A brief history of the West Valley project is set out in Senate Report No. 96-787, 96th Cong., 2d Sess. (1980).

[3] West Valley Demonstration Project Act, *supra*, §2(c).

NFS objected to the amendment on the ground that it left NFS with residual responsibility under its portion of the license without any means of supervising DOE's activities during that agency's temporary administration of the facility. The Commission issued the amendment. NFS thereafter requested a hearing on it and sought to postpone its effectiveness pending the hearing. Dr. Irwin D. J. Bross, Director of Biostatistics at the Roswell Park Memorial Institute, the appellant here, also sought a hearing on Change 31 to consider what he characterized as the "misguided DOE efforts to clean up the 30,000,000 curies in Tank 8D2 [that] could endanger the health and safety of hundreds of thousands of Western New Yorkers. . . ."[4] The Commission refused to stay the effectiveness of Change 31 but ordered that a Licensing Board be established to conduct a hearing on NFS' contentions regarding the amendment, and to rule on Dr. Bross' request. CLI-81-29, 14 NRC 940 (1981).

In an attempt to resolve its disagreement with the State, NFS brought suit in federal court to compel the State to accept possession of the facility. The State thereafter sued NFS in state court seeking to compel NFS to continue to maintain the low-level storage facilities that are unrelated to the DOE project. The state court action was removed to the federal court and consolidated with NFS' suit. At that point, the State modified its position and requested partial summary judgment to require NFS to vacate the high-level waste portion of the facility to DOE. On October 16, 1981, the court granted the State's motion for partial summary judgment and ordered NFS to vacate the high-level waste portion of the facility.[5] The court specifically declined, however, to decide the issue of residual responsibility. The court of appeals reversed and ordered all matters set for trial.[6]

In the wake of the court decisions, NFS, with the support of the State, sought an additional amendment which would terminate NFS' responsibilities as a licensee. After finding that the amendment — so-called Change 32 — involved no significant hazards, the Commission issued the amendment terminating NFS' responsibilities under the license upon (i) the State's acceptance of NFS' surrender of the facility, (ii) DOE's assumption of exclusive possession, and (iii) the arrival of the final settlement date terminating the pending litigation, now scheduled for early 1983. DOE assumed exclusive possession of the facility on February 25, 1982.[7]

In view of the issuance of Change 32, NFS withdrew its earlier request for a hearing. Dr. Bross, however, filed with the Licensing Board a request for a hearing in connection with Change 32, reiterating in summary form his claim earlier raised in connection with Change 31 that DOE's conduct of the project will cause hazards.[8]

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[4] Letter of Irvin D. J. Bross to Sam Chilk (Oct. 16, 1981).

[5] The State sought to evict NFS from the 158.8 acres on which the high level liquid wastes and reprocessing facilities are located; the State apparently wants NFS to retain possession of and responsibility for the low-level burial site that is unrelated to the DOE project.

[6] *New York State Energy Research and Development Agency* v. *Nuclear Fuel Services, Inc.*, CIV-81-18E (W.D.N.Y. Oct. 16, 1981), *rev'd*, No. 81-7736 (2d Cir., Dec. 8, 1981).

[7] DOE's assumption of control was made effective pursuant to Change 31. As noted above, Change 32, although issued, is not yet fully effective. Until then, NFS remains a licensee.

On April 30, 1982, the Licensing Board approved NFS' motion to withdraw its earlier hearing request and denied Dr. Bross' two requests. LBP-82-36, 15 NRC 1075. With respect to the latter, it found that the two amendments were "related" within the meaning of 10 CFR 2.717(b) so that it could consider Dr. Bross' hearing request on Change 32 even though the Board had been explicitly empowered to review only the request for a hearing on Change 31. After an analysis of the language and legislative history of the West Valley Act, the Board concluded that the statute precludes any NRC hearings such as those sought by Dr. Bross with respect to DOE's conduct of the project. *Id.* at 1091-92.

Dr. Bross appeals the denial of his request for a hearing on Change 32.[9] Although the arguments contained in his brief are far from clear, Dr. Bross accepts the denial of his hearing request on Change 31, *i.e.*, the Board's conclusion that the West Valley Act precludes the Commission's formal evidentiary examination of DOE's waste solidification activities. He argues, nonetheless, that the Commission may examine Change 32 in a formal hearing because that change does not directly involve DOE as a principal. Because Change 32 by its terms merely resolves various matters between the co-licensees NFS and the State, but does not affect DOE directly, Dr. Bross contends that this amendment may be used as the vehicle for holding a hearing on issues involving the public health and safety, including the fitness of DOE to have control of what he describes as "a very tricky clean-up operation (much worse than TMI-2)."[10] Failure to grant the requested hearing, Dr. Bross believes, deprives him and others in western New York of financial and health protection without due process. The State, NFS and the NRC staff, as well as the *amicus curiae* DOE, support the Licensing Board's result. We affirm.[11]

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[8] Dr. Bross' February 16, 1982 letter requesting a hearing states, in part: "Certainly the issues involving the public health and safety of the citizens of Western New York that I had previously raised before the Board apply with even more force to an amendment that would accelerate the onset of these documented hazards."

[9] Our decision is narrowly limited to the issue presented on appeal, *i.e.*, whether Dr. Bross is entitled to a hearing with respect to Amendment 32. For example, we assume, without deciding, that Changes 31 and 32 are "related" within the meaning of 10 CFR 2.717(b) so that the Licensing Board had jurisdiction to consider Dr. Bross' hearing request on Change 32. Similarly, we express no view on the question of whether the West Valley Act subjects DOE to any of the licensing provisions of the Atomic Energy Act. See generally 10 CFR 50.11(b).

[10] Appeal Brief of Dr. Bross (May 7, 1982) at 4.

[11] DOE filed a motion to submit a brief as an amicus in accordance with 10 CFR 2.715(d). We granted the motion but Dr. Bross asks us to reconsider. He argues that DOE's interest is sufficiently direct to require it to participate as a full party. We disagree. "Amicus curiae," strictly translated from the Latin, means "friend of the court," a definition intended to distinguish that kind of participant from the party advocate. Such a participant assists the tribunal in resolving matters of general public import or insures a complete presentation of difficult issues so that a proper decision is reached. *Alexander* v. *Hall*, 64 F.R.D. 152, 155 (D.S.C. 1974). We allow amicus participation where we believe it will assist our resolution of the issues and not prejudice the rights of the parties. See, *e.g.*, *Consumers Power*

(Continued)

II. ANALYSIS

We agree with the Licensing Board's conclusion that, in light of the West Valley Act which limits NRC review of DOE's plan to informal, consultative procedures, the Commission may not explore DOE's administration of the waste solidification project in a formal evidentiary hearing through review of Change 32 to which DOE is not a party. We cannot, in other words, use indirect means to undertake the type of evidentiary examination that Dr. Bross agrees we cannot undertake directly.

This conclusion does not result in any deprivation of Dr. Bross' due process rights. Congress has decided to substitute special procedures administered by DOE for the ordinary NRC hearing procedures in connection with the West Valley project.[12] DOE's brief indicates that Dr. Bross received a copy of its draft environmental impact statement, along with an announcement of the public hearing conducted by DOE and that, following the hearing, Dr. Bross submitted written comments that are currently under review by DOE. His substantive health and safety concerns will thus be evaluated. Dr. Bross may seek judicial relief if he believes that DOE has failed to fulfill its responsibilities under NEPA or the West Valley Act.

The Licensing Board's order denying Dr. Bross' two hearing requests is *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins Secretary to the
Appeal Board

Company (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, note 2 (1981). As a practical matter, however, there is no bright line between the role of an amicus and that of a traditional party. Amici sometimes have some interest in the outcome of a case; often that interest borders on, or even overlaps, that of a party. See generally, *United States* v. *Barnett*, 376 U.S. 681, 737-739 (1964) (Goldberg, J., dissenting); and *New England Patriots Football Club, Inc.* v. *University of Colorado*, 592 F.2d 1196 (1st Cir. 1979). At times that interest may be such that the tribunal refuses to allow amicus participation. *Alexander* v. *Hall*, *supra*. This is not such a case. Although DOE is plainly not a wholly disinterested party, Dr. Bross has not been prejudiced by DOE's participation and our substantive resolution of Dr. Bross' appeal makes DOE's participation as a full party unnecessary. In such circumstances, DOE's participation as an amicus is proper. Upon reconsideration, we affirm our earlier ruling.

[12] The House Commerce Committee noted that the legislation specifically required the DOE Secretary to hold public hearings in the vicinity of the Center to inform the residents of the area of the activities proposed and to receive their comments on the project. The Committee explained that it expected that the Secretary "will afford interested members of the public every opportunity to participate in a meaningful manner at each stage of the process and that such public hearings will provide a useful forum for addressing public concerns." It also indicated its expectation that DOE would fully comply with all NEPA requirements. H.R. Rep. No. 96-1100, Part 2, 96th Cong., 2d Sess. 19-20 (1980).

Cite as 16 NRC 127 (1982) **ALAB-680**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Eilperin, Chairman
Dr. W. Reed Johnson
Dr. Reginald L. Gotchy

In the Matter of **Docket Nos. 50-361-OL**
50-362-OL

SOUTHERN CALIFORNIA EDISON
COMPANY ***et al.***
(San Onofre Nuclear Generating
Station, Units 2 and 3) **July 16, 1982**

The Appeal Board denies intervenors' motion for a stay pending appeal of the Licensing Board's initial decision (LBP-82-39, 15 NRC 1163 (1982)) which authorized the issuance of a full power operating license for Units 2 and 3 of this facility.

RULES OF PRACTICE: STAY PENDING APPEAL

The determination whether an application for a stay of a licensing board decision should be granted is governed by the criteria in 10 CFR 2.788(e).

OPERATING LICENSE: SUSPENSION (PENDING APPELLATE REVIEW)

In deciding whether to allow operation of a plant during appellate review of the pertinent licensing board decision, the standard to be applied is whether operation of the plant over the additional proceedings is consistent with the requirement that there be reasonable assurance that the public health and safety not be endangered. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 2), ALAB-486, 8 NRC 9, 46 (1978). That standard does not call upon a party to show that a serious nuclear accident is likely during the pendency of the appeal; it would be enough to show that apparent inadequacies were sufficient to raise the question whether plant operation would present an undue risk to the public in the event of a serious nuclear accident. *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 698 (1982).

EMERGENCY PLANS: CONTENT (DEFICIENCIES IN)

Under the Commission's emergency planning regulations, an applicant for a plant operating license has an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the emergency plans for the plant are not significant, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation. 10 CFR 50.47(c)(1).

APPEAL BOARD: STANDARD OF REVIEW

In reviewing a licensing board decision in the context of a motion for a stay pending its appeal, the normal deference that an appeal board owes to the trier of facts when reviewing a decision on the merits is even more compelling. See *Toledo Edison Co.* (Davis-Besse Nuclear Power Station, Units 1, 2 and 3), ALAB-385, 5 NRC 621, 629 (1977).

APPEAL BOARD: SCOPE OF REVIEW

An appeal board may disagree with a licensing board's interpretation on an issue even if no party presses an appeal on that issue. *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978).

APPEAL BOARD: SCOPE OF REVIEW

Where a party has not pursued a contention before the Licensing Board in the form of proposed findings of fact, the Appeal Board will not entertain it "for the first time on appeal — absent a 'serious substantive issue.' " *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).

OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF NRC STAFF

At the operating license stage, the NRC staff generally has the final word on all safety matters not placed into controversy by the parties. *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 n.31 (1981).

OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF NRC STAFF

An operating license may not issue unless and until the agency makes the findings specified in 10 CFR 50.57 — including the ultimate finding that such issuance "will not be inimical to . . . the health and safety of the public." As to those aspects of reactor operation not considered in an adjudicatory proceeding (if one is conducted), it is the staff's duty to insure the existence of an adequate basis for each of the requisite Section 50.57 determinations. *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895-96 (1981), *affirmed sub nom. Fairfield United Action v. Nuclear Regulatory Commission*, No. 81-2042 (D.C. Cir., April 28, 1982).

RULES OF PRACTICE: IMMEDIATE EFFECTIVENESS REVIEW

Before a full power operating license issues for a plant, the Commission must complete its immediate effectiveness review of the pertinent licensing board decision pursuant to 10 CFR 2.764(f)(2).

APPEARANCES

Mr. Charles E. McClung, Jr., Laguna Hills, California, for the intervenors, GUARD and Carstens, *et al.*

Mr. Edward B. Rogin, San Francisco, California (with whom **Messrs. David R. Pigott, Samuel B. Casey, John A. Mendez, Charles R. Kocher**, and **James A. Beoletto** were on the brief) for the applicants Southern California Edison Company, *et al.*

Mr. Lawrence J. Chandler for the Nuclear Regulatory Commission staff.

DECISION

Intervenors Guard and Carstens, *et al.*, have asked us to stay the Licensing Board's May 14, 1982 initial decision which authorizes the issuance of a full power operating license for the San Onofre Nuclear Generating Station, Units 2 and 3. LBP-82-39, 15 NRC 1163. Their principal argument is that the deficiencies the Licensing Board found in San Onofre's emergency plan should preclude full power operation. More particularly, we are told that (1) the applicants' failure to provide a siren warning for some 30,000 people who live in the Dana Point and San Juan Capistrano areas, (2) the failure to make medical arrangements for the general public that might suffer radiation injury in a serious nuclear accident, and (3) the inadequate radiation monitoring capability of the localities near San Onofre should have resulted in the denial of a license until the deficiencies are corrected. A number of other arguments, mostly procedural in nature, are also urged in support of the stay motion. For the reasons given in this opinion, we deny the stay motion.

I. LEGAL PRINCIPLES

In determining whether a stay should be granted we apply 10 CFR 2.788(e), which calls upon us to consider:

(1) Whether the moving party has made a strong showing that it is likely to prevail on the merits;

(2) Whether the party will be irreparably injured unless a stay is granted;

(3) Whether the granting of a stay would harm other parties; and

(4) Where the public interest lies.

The first of those determinations — the merits of the emergency planning issues — has a decided influence on the issues of irreparable injury and the public interest: for in deciding whether to allow operation of a plant during our appellate review we look to whether "operation of the plant over the period required to complete the additional proceedings [is] consistent with the requirement that there be reasonable assurance that the public health and safety not be endangered." *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 2), ALAB-486, 8 NRC 9, 46 (1978). That standard, we have said, does not call upon intervenors to show that a serious nuclear accident is likely during the pendency of the appeal. *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 698. To paraphrase our earlier *San Onofre* opinion, it would be enough if apparent inadequacies in emergency planning "were sufficient to raise the question whether plant operation would present an undue risk to the public in the event of [a serious nuclear accident]." *Id.* at 698 (footnote omitted).

In considering the merits, however, we do not take the text of the emergency planning requirements in isolation. Recognizing that those requirements are new, and that they necessitate extensive coordination among licensees and local and state governments (and thus are not wholly within the power of its licensees to satisfy),[1] the Commission has provided that, even if there are deficiencies,

> the applicant will have an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation.

10 CFR 50.47(c)(1).[2] Thus, when determining the merits of an emergency planning issue, the Commission's regulations call upon us not only to look to the requirements that have been imposed, but also to exercise judgment as to the significance of whatever deficiencies there may be and the adequacy of interim measures to rectify them.

II. THE MERITS

We now turn to a consideration of the merits of intervenors' arguments for a stay of the full power license authorization for San Onofre.

A. Siren Coverage

1. Background

Basic to emergency planning is the requirement for a notification system so that protective action can be taken by the public. The Commission's regulations require that, within 15 minutes of declaring an emergency, a licensee must have the means to notify government officials of the seriousness and nature of the accident. In turn, should those officials decide that protective measures such as sheltering or evacuation are required, in about another 15 minutes they must be able to alert the general public who reside in the plume emergency planning zone (EPZ). The plume EPZ is an area within approximately 10 miles of the plant, the precise bounds of which are to be determined by local conditions and needs. 10 CFR Part 50, Appendix E, Section IV.D.3; 10 CFR 50.47(b)(5), (c)(2).[3]

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[1] See generally 45 *Fed. Reg.* 55403-04, 55406-07 (August 19, 1980).

[2] Another part of the emergency planning regulations, 10 CFR 50.54(s)(2)(ii), provides as well a four-month grace period for already-operating plants to correct emergency planning deficiencies. If deficiencies remain after that time the Commission then determines what enforcement action to take, guided by the same considerations we have already quoted.

The means of prompt notification proposed by the applicants was a network of 41 sirens to cover the plume EPZ. The precise configuration for that zone was a contested issue in the proceeding. The Licensing Board concluded that the applicants' 10-mile zone was too constricted because it did not afford siren coverage to the 30,000 people who reside across San Juan Creek in the community of Dana Point and the northern half of the town of San Juan Capistrano. In all other respects these areas were fully included in the emergency plan. Tr. 7371-72, 8910-11; LBP-82-39, 15 NRC at 1183. Accordingly, the Board extended the EPZ two to three miles to encompass those areas. In its view, this extension (1) falls well within the dictates of 10 CFR 50.47(c)(2) that the plume EPZ be "about 10 miles," (2) is supported by the requirement in that regulation to pay heed to local characteristics such as jurisdictional boundaries, (3) will eliminate the confusion that could be caused by applicants' bifurcated EPZ, and (4) has the benefit of giving full coverage to a populated area at little additional cost. *Id.* at 1183-84.

The Licensing Board ruled further, however, that the current absence of siren coverage for the populated areas across San Juan Creek was not grounds for denying the applicants a license for full power operation. The Board's conclusion was based on its finding that alternative means (such as loudspeakers from helicopters and police cars) exist to provide a prompt alert to this public in the event of an emergency. *Id.* at 1205, 1266-67. Hence, in the words of 50.47(c)(1), there was reasonable assurance that "adequate interim compensating actions have been or will be taken." The Board imposed a license condition, which it clarified in a subsequent order (LBP-82-40, 15 NRC 1293 (1982)), that requires the applicants to remedy the siren warning deficiency within six months of the commencement of full power operation.

Intervenors do not quarrel with the Board's reliance on the alternatives to sirens in deciding whether the warning system can function adequately until full siren coverage is in place. They do contest, however, the Board's factual conclusion that helicopter and police car loudspeakers will be adequate for the job. Intervenors argue that the record is devoid of factual support for the conclusion that helicopters and emergency vehicles can be diverted to notify 30,000 people within an adequate period of time. App. Tr. 22-23.

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[3] After specifying that the plume EPZ shall consist of an area "about 10 miles (16 km) in radius," 10 CFR 50.47(c)(2) further provides that:

> The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

2. *Analysis*

On factual issues that arise in the context of a stay motion we are very hesitant to substitute our judgment for that of the Licensing Board. The Board has, after all, presided over the entire proceeding. Our familiarity with the facts in the limited time we have had for review is perforce much less. The normal deference that an appellate body owes to the trier of the facts when reviewing a decision on the merits is thus even more compelling at this preliminary stage of review. See *Toledo Edison Co.* (Davis-Besse Nuclear Power Station, Units 1, 2 and 3), ALAB-385, 5 NRC 621, 629 (1977).

Here, while the record on the issue is sparse, there is enough to support the Licensing Board's conclusion as to the adequacy of interim alerting measures. The 30,000 people who live across San Juan Creek in the Dana Point and San Juan Capistrano areas are clustered in a densely populated area of a relatively few square miles. See Applicants' Exhibit 132, fig. 10 and Appendix A-2. To alert these people, Orange County could call upon some of its 2,000 emergency vehicles, practically all of which have either loudspeakers or sirens. Tr. 8763, 8916. The marine base at nearby Camp Pendleton has helicopters equipped with loudspeakers that could also be pressed into emergency service. Tr. 9342-43, 9373. California Highway patrol cars equipped with loudspeakers may also be of assistance. Tr. 8268-72.

While the record does not indicate how many emergency vehicles or helicopters can be deployed to cover the Dana Point and San Juan Capistrano areas on short notice, it was the opinion of Mr. Egbert S. Turner, Manager of the Emergency Management Division, Orange County General Services Agency, that with existing siren coverage and county resources he could get notice out to all people within his jurisdiction (including those in Dana Point and San Juan Capistrano) within 30 minutes. Tr. 9003-05, 9021-22.[4] Moreover, siren coverage would not be wholly absent because two of the 41 sirens already in place are outside the 10-mile radius near those populated areas, and would provide an adequate level of alerting sound to at least some limited part of that region. See Applicants' Exhibit 135; Tr. 6931, 7372.

Mr. Turner's 30-minute alert estimate suffices to support the Board's conclusion that adequate compensating measures to address the siren deficiency will be undertaken. The emergency planning regulations provide as a "design objective" that local officials must be able to alert essentially all of the public initially

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[4] This is the only time estimate we have been able to discover in the record on this point. See also Applicants' Exhibit 53 at V-6, which indicates that Orange County believed it could notify all people in the plume EPZ within one hour, even before the applicants' siren warning system was installed. We note also that the Orange County emergency procedures still include the idea that mobile units would be used in areas to be evacuated even when there is siren coverage. Tr. 9021-22.

"within about 15 minutes" from the time the officials themselves are notified of the emergency by the licensee. 10 CFR Part 50, Appendix E, Section IV.D.3. The guidance that implements the Commission's regulations reiterates the objective of an alert signal on an area-wide basis throughout the 10-mile EPZ within 15 minutes.[5] It goes on to provide that the objective of the initial notification shall be to assure coverage of essentially 100 percent of the population within five miles of the site. As to those who are more distant, or those who did not receive the initial notification, the guidance provides that "[s]pecial arrangements will be made to assure 100% coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure EPZ."[6]

As we read that implementing guidance, it calls for those nearest the nuclear power plant to be assured of the most prompt warning, while those farther away — in the remaining portion of the plume EPZ — are to be notified in all circumstances within 45 minutes. The allowance of additional time to notify people farther from the nuclear power plant site is in recognition of not only the potentially more difficult notification problem but, more importantly, the lesser risk to those farther away. Thus, the report that provided much of the technical basis for the Commission's choice of a 10-mile plume EPZ[7] explained that

> although protective actions may be required for individuals located in areas further than 10 miles from the reactor for an "atmospheric" release, the actual measures used and how rapidly or efficiently they are implemented, will not strongly influence the number of projected early health effects.[8]

So too, in discussing the time factors associated with releases, the guidance document implementing the Commission's regulations stated:

> The range of times between the onset of accident conditions and the start of a major release is of the order of one-half hour to several hours. The subsequent time period over which radioactive material may be expected to be released is of the order of one-half hour (short-term release) to a few days (continuous release).

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[5] NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Rev. 1 (November 1980), Appendix 3 at 3-3. This document was jointly prepared by the NRC staff and the staff of the Federal Emergency Management Agency.

[6] *Ibid.*

[7] See 44 *Fed. Reg.* 61123 (October 23, 1979); 45 *Fed. Reg.* 55406 (August 19, 1980).

[8] NUREG-0396, Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants (December 1978), at I-52. The report explained further (*id.* at I-50):

> In the intervals beyond 10 miles, there is little apparent distinction between the effectiveness of evacuation and sheltering strategies in terms of projected early fatalities or injuries. The mean number of early fatalities is 0 in both of these intervals, and projected early injuries, although not 0, are greatly reduced for each of the protection strategies investigated.

NUREG-0654, note 5 *supra*, at 13. The time for a radioactive release to travel to a point 10 miles from the plant is typically another one to four hours. *Id.* at 17.[9]

In short, time is not of the essence for people living more than 10 miles from the site of a potential accident at San Onofre. The technical analysis underlying the Commission's regulations recognizes this, and the implementing guidance of NUREG-0654, which requires less immediate notification to those persons farther away from the accident (45 minutes for essentially 100 percent notification), is to the same effect. See generally NUREG-0396, note 8 *supra*, at I-44 through I-52. While it is prudent to provide as much alerting time as possible, we conclude that the 30 minutes Mr. Turner thought it would take to notify the people in his area provides an adequate interim compensating measure to an area-wide siren alert. Intervenors have not made a strong showing that they are likely to prevail on the merits of their argument to the contrary.

B. Medical Assistance for the Radiation-Injured in the General Public

1. Background

The Licensing Board ruled that 10 CFR 50.47 requires the emergency response plans of the applicant and the surrounding area jurisdictions to provide for medical arrangements for members of the general public who might suffer radiation injury in a serious nuclear accident. LBP-82-39, 15 NRC at 1199.[10] The Board also concluded that the absence of such medical arrangements for a period of six months should not preclude full power operation. The Board based this latter conclusion on several factors: (1) the remote possibility of a nuclear accident in the six months the Board allowed for the applicants and local officials to plan for medical arrangements; (2) the capability of the applicants' emergency medical plan for its own employees to care for some persons injured offsite as well; (3) the extant ability to provide medical services for the general public on an ad hoc basis; and (4) the good faith efforts of the applicants and local officials to meet a "sometimes less than completely clear" emergency planning requirement. *Id.* at 1199-1200, 1290.

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[9] If the travel time were shorter, the expected doses would be correspondingly lower. As observed in NUREG-0396, note 8 *supra*, at 18:

> [U]nder poor dispersion conditions associated with low windspeeds, two hours or more might be required for the plume to travel a distance of five miles. Higher windspeeds would result in shorter travel times but would provide more dispersion, making high exposures at long distances much less likely.

[10] The applicants and staff disputed the Board's interpretation. When the meaning of the regulation was debated before the Licensing Board the applicants took the position that the requirement in 10 CFR 50.47(b)(12) to make medical arrangements for "contaminated injured individuals" referred to contaminated persons who had been *traumatically* injured. Tr. 9637-40.

The staff's position has been less than clear. Before the Licensing Board the staff argued that the term contaminated injured was "broad enough to include an injury with a contaminated wound or just an excessive radiation dose without a wound." Tr. 9650. Nevertheless, despite this position that "injury" could mean either traumatic injury or radiation injury, the staff went on to argue that the regulations require no specific medical arrangements for the general public who might be injured in the most serious and improbable of nuclear accidents. Tr. 9651-52. On appeal, the staff termed its disagreement with the Licensing Board a disagreement over whether "planning" or "pre-planning" was required, the Board calling for the former and the staff arguing only for the latter. App. Tr. 69-70. This distinction, we are told, is the difference between requiring specific medical arrangements and merely identifying general medical resources. App. Tr. 69-72.

While neither the applicants nor the staff has appealed the Board's ruling, we nevertheless are free to disagree with the Board's interpretation even if no party presses an appeal on the issue. *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978).

Intervenors challenge the Board's decision to allow full power operation in the face of this emergency planning deficiency. Their challenge is said to be more than a factual dispute about whether alternative measures will compensate for the deficiency in medical arrangements. Here, intervenors argue, the Licensing Board has provided the applicants a six-month grace period without making any finding that interim compensating actions will be taken. Moreover, in their view, the Board afforded the grace period only because of the unlikelihood of an accident, a factor intervenors contend the emergency planning regulations do not allow the Board to consider. App. Tr. 9-11. See 10 CFR 50.47(c)(1).

2. *Analysis*

Despite the Licensing Board's detailed examination of the history of the medical services regulation, we entertain serious doubts that the Board's reading is accurate. The text of 50.47(b)(12) is as follows (emphasis added):

> (b) The onsite and offsite emergency response plans for nuclear power reactors must meet the following standards: * * * (12) Arrangements are made for medical services for *contaminated injured* individuals.

On its face, the regulation requires arrangements for medical services only for "contaminated injured" individuals, not for members of the general public who may have suffered radiation exposure or injury in a nuclear accident. The distinction between the two classes of people is not inadvertent.[11] It is based upon a judgment as to their anticipated needs for emergency treatment. And it is an emergency planning regulation we are construing.

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[11] For present purposes, the primary distinction is between those persons who have been contaminated and traumatically injured (*i.e.*, persons who have radionuclides on or in their bodies and also are physically injured) as opposed to persons who have been exposed to radiation. In actuality, there could be additional categories, based on the factors of (1) radiation exposure, (2) traumatic injury, and (3) contamination.

For persons who suffer radiation injury (*i.e.*, approximately a 200 rem radiation dose) and are contaminated, generally 90 percent of their surface contamination can be removed simply through bathing or showering. This reduces the contamination to levels that are medically quite small so that whatever residual contamination may remain does not interfere with the treatment for radiation injury. Tr. 7743-45.

Persons who are contaminated but have not received substantial radiation doses would not need any hospital treatment. Decontamination would be a matter of washing with soap and water. Tr. 7720. See also Tr. 7087-88, 10,822, 10,850-51.

"Contaminated injured" is a distinct category encompassing potential patients whose traumatic (*i.e.*, physical) injuries are complicated by radioactive contamination. As Dr. Roger E. Linnemann explained:

> A patient who has been exposed to radiation does not, in turn, give off radiation any more than a burn[ed] patient gives off heat. There has been damage and . . . the clinical course unfolds over a period of time.
>
> This means that we do have time to react and time to plan.
>
> * * *
>
> [T]he problem arises if the person is injured and contaminated. This requires special facilities at a hospital. It requires special facilities because we would rather not admit those persons to our normal emergency room because contamination is loose. It can fall on the floor . . . in the emergency rooms, where people move in and out quite quickly, and the first thing you know you could cause contamination in the hallways of the hospital. . . . [T]herefore we have designed facilities where a patient can be treated for his traumatic injury while you control the contamination.

Tr. 7719-21. See also Tr. 7082-84, 7727-29, 7745-48. Dr. Linnemann further explained that because the clinical course of radiation injury unfolds over time and "is seldom, if ever, life threatening[,] . . . in all cases [treatment of] the traumatic injury takes precedence." Tr. 7721. In short, the contaminated injured need emergency care for their traumatic injuries. Plans must be in place to provide that care without contaminating the persons or facilities providing it. People who suffer radiation injury, on the other hand, are unlikely to need emergency treatment.

The record is clear that relatively few people are expected to be both contaminated and traumatically injured in a nuclear accident. The estimate was from one to perhaps 25 or so. Tr. 11,060-61. See also Tr. 7747. These people would be principally workers onsite who become contaminated and injured during the course of the accident. The contaminated injured could also include members of the general public, such as emergency workers, who might be involved in monitoring a contaminated area onsite and are then injured (for example) in a traffic accident. Tr. 11,059-61. See also Tr. 7746-48. The applicants' present emergency plan is fully adequate to cope with these eventualities. The applicants have specific arrangements with three hospitals to provide medical services to contaminated injured individuals, and Orange County's emergency response plan identifies 13 area hospitals that have the capability of handling patients with radioactive contamination. Applicants' Exhibit 53 at IV-2, V-39; Tr. 7107-09, 11,059-61. See also Testimony of John R. Sears, fol. Tr. 10,644, at 7-8. See generally Applicants' Exhibits 85-99. These existing plans can be built upon and expanded on an ad hoc basis should the need arise. Tr. 10,830-33.

Both Dr. Linnemann for the applicants and Dr. Mary Reed for the intervenors agreed it was not likely that large numbers of the general public would receive such high doses of radiation in a nuclear accident as to warrant hospitalization or emergency treatment. Tr. 7087, 7727, 10,276-78.[12] Hospitalization would be recommended for persons who had received an exposure of 150 to 200 rem or upwards over the course of a few hours. Tr. 7728, 7767. Under the emergency response plans, it is envisioned that protective action (for example, sheltering or evacuation) would be initiated when projected doses to the general public are in the range of one rem. Tr. 7210-11. See NUREG-0654, note 5, *supra*, at 60-61, Criteria J.7, J.9. Thus, for a serious nuclear accident to result in the hospitalization of large numbers of people, not only must an already unlikely accident be severe,[13] but also the emergency response to protect the public must be ineffectual. Even then, intervenors' witness Dr. Rex Ehling agreed with Drs. Reed and Linnemann that hospitalization would not be an emergency matter. Tr. 7087, 7109, 7718-19, 9979, 10,277-78. Moreover, Dr. Ehling testified that there are several thousand hospital beds immediately available in Orange County that could care for people who require hospitalization for radiation injury. Tr. 9979-80, 9991-92.[14]

The foregoing discussion indicates that intervenors have failed to make a strong showing that they are likely to prevail on their claim that San Onofre should not operate at full power until plans are in place for medical arrangements for those members of the general public who may suffer radiation exposure in a serious nuclear accident. As we have explained (see pp. 136-137, *supra*), there is serious doubt that the Commission's regulations require arrangements of that kind. Assuming that such arrangements are required, however, the standard of 10 CFR 50.47(c)(1) allowing for plant operation in the face of emergency planning deficiencies has nonetheless been met. This is so for two reasons. First, given the expert medical testimony that immediate hospitalization would not be necessary for radiation injury, the asserted planning deficiency is "not significant." Second, in view of the immediate availability of hospital beds and trained people to care for those who have received substantial radiation doses, there is reason to conclude that "adequate interim compensating actions have been or will be taken promptly."[15]

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[12] Dr. Linnemann foresees the possibility that in a serious nuclear accident there would be large numbers of people slightly exposed to radiation and exceedingly anxious. He thinks that they would require monitoring attention at reception centers and information by persons knowledgeable about the effects of radiation, as are currently provided for by local emergency plans. See generally Applicants' Exhibit 53 at IV-11-12, V-39-42 through 43-44. Dr. Linnemann believes, however, that hospitalization would be undesirable for such persons. Tr. 7087.

[13] The Licensing Board's initial decision reproduces Table 7.4 from NUREG-0490, Final Environmental Statement (April 1981). LBP-82-39, 15 NRC at 1198. It shows, for example, that the probability of an accident at San Onofre that would deliver doses of over 200 rem to 2,000 people is one in one million in any one year of reactor operation. The staff thinks this calculation is conservative — perhaps unrealistically so — because (1) it assumes that the general public will be evacuated in the direction of the radioactive plume; (2) the probability of the most severe accident is now thought to be lower than calculated in the FES; (3) it assumes that people who would not be evacuated would simply go about their usual business; and (4) no timely protective action was assumed for people beyond the EPZ during a severe accident that might threaten them. Tr. 10,330, 10,335-36, 10,339-41. The staff concluded that Table 7.4 "should not be used for emergency planning purposes due to the degree of conservatism in the assumptions used in the calculations on which the table is based." Tr. 10,341.

[14] Dr. Linnemann noted that it is not at all unusual for hospitals to be capable of treating patients with radiation injury. Tr. 7728-29.

C. Ability of Offsite Jurisdictions to Monitor and Assess Radiological Emergencies

1. *Background*

The governing regulation, 10 CFR 50.47(b)(9), requires the applicants and local jurisdictions to have "[a]dequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency. . . ."[16] The Licensing Board explained the importance of this requirement in its decision (15 NRC at 1201):

> Should there be an actual or potential radiological release from San Onofre, the nature and magnitude of the release and the prevailing meteorological conditions must be established and kept current so that potential offsite doses can be projected. Such projections give decision-makers in the offsite response organizations the information they need to make correct decisions concerning the appropriate protective action — sheltering or evacuation. Field monitoring confirms the accuracy of offsite dose projections made on the basis of onsite data.

The Board noted that all parties had acknowledged there were deficiencies in the radiation assessment capabilities of the local jurisdictions. *Id.* at 1201. Accordingly, the Board focused its attention primarily on whether the applicants' capabilities could meet all needs for radiation monitoring and assessment in the plume EPZ. After reviewing those capabilities, the Board found that "the [a]pplicants, at least with the emergency support from other utilities, can carry out all of the necessary radiological assessment and monitoring, both onsite and in the plume EPZ." *Id.* at 1202. In addition, the Board found that the offsite organizations possessed significant capabilities in this regard and would assist the applicants in an emergency. *Ibid.* The Licensing Board's ultimate finding was that

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[15] In view of our disposition of this point, we need not decide whether the Licensing Board erred in considering as one of the bases for allowing full power operation that the probability of any nuclear accident during the first six months of operation was remote.

[16] This requirement is generally broken down to cover two distinct types of radiological hazard — that associated with exposure to the radioactive plume and that associated with the ingestion pathway. Plume exposure occurs when persons are (1) directly exposed to radiation emitted by the plume, (2) exposed to materials they may have inhaled from the plume, or (3) exposed to radiation from material deposited on the ground from the plume. Radiation exposure from the ingestion pathway occurs when persons eat or drink material that has become contaminated by the depositing of radioactive material from the plume onto the ground or into the water supply. The most important ingestion pathway is typically the grass-cow-milk-human chain. See generally NUREG-0654, note 5 *supra*, at 14-17; Applicants' Exhibit 53 at II-2-3.

Intervenors' argument is directed mainly to the plume EPZ monitoring and assessment requirement. See pp. 140, 142-143, *infra*.

> deficiencies in the offsite response organizations in meeting applicable standards for assessment and monitoring in the plume exposure pathway are not significant for San Onofre within the meaning of 10 CFR 50.47(c)(1). This means that such deficiencies are not an impediment to licensing.

Id. at 1202. See also *id.* at 1263-64.[17] Intervenors challenge the factual basis for the Board's conclusion and contend that, as a matter of law, redundant monitoring and assessment capability must exist in offsite jurisdictions in order to provide a reasonable basis for protective action response.[18]

2. *Analysis*

The NUREG-0654 guidance that implements the Commission's emergency planning requirements provides, among other things, that in an accident situation a licensee must have the capability to measure the radiation levels in the plant. It must also have an onsite Technical Support Center (TSC) and an offsite Emergency Operations Facility (EOF) capable of taking radiological and meteorological data and making an assessment of actual and potential offsite radiation exposure. See NUREG-0654, note 5 *supra*, at 56-57, Criteria I.1-I.6. The offsite organizations (*i.e.*, the local governments) are to be able to put equipped, trained monitoring teams into the field to make dose measurements, including the measurement of radioiodine in the air. *Id.* at 57-58, Criteria I.7-I.11. These localities should then be able to decide upon and implement protective actions, such as sheltering or evacuation, based upon and consistent with the radiological hazards information that has been provided. *Id.* at 61-64, Criteria J.9-J.10.

a. It is plain from the record that the applicants have the ability to assess potential offsite radiological consequences and to provide local officials with the information necessary for their decisions. Two independent facilities are at the applicants' disposal for this purpose. The most important dose assessment capability is that provided by the applicants' Technical Support Center adjacent to the plant control room. This facility has immediate access to in-plant radiation and effluent monitoring information, as well as to meteorological information and data regarding the status of other crucial plant parameters that may govern the future course of an accident. See NUREG-0712, Safety Evaluation Report (February 1981), at 13-8; Tr. 7165-67. The TSC is in direct communication with each of the surrounding jurisdictions through their emergency operations centers and can provide them directly with dose assessment information. Tr. 7377. The TSC also receives offsite dose monitoring results from field teams sent out by the applicants and by the offsite organizations. Tr. 7170-75.

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[17] These facts also led the Board to conclude that adequate interim compensating action to monitor and assess radiological releases would be taken within the meaning of 10 CFR 50.47(c)(1). 15 NRC at 1288-89 and n.66. The Board also imposed license conditions requiring the applicants to maintain their monitoring and assessment capabilities at no less a level of readiness than was described at the hearing, and to have installed and operating within six months after full power operation a second meteorological tower and a health physics computer to perform offsite dose calculations in the event of an accident.

[18] Application for Stay of Full Power License (June 1, 1982) at 3

In addition, the applicants have an offsite dose assessment center (ODAC) in the Emergency Operations Facility.[19] In the event of an accident the ODAC will be manned by the applicants' trained technical personnel, a health physicist from Orange County, and representatives from other local organizations and the State. Tr. 7379-80. This facility is in direct communication with the TSC and would receive the results of offsite radiation monitoring activity. Consequently, the present facilities provide independent capabilities for radiological consequences assessment in which the offsite jurisdictions would participate directly in a technical role.

The ODAC is also capable of being used to provide local officials who are stationed at the various emergency operations centers with information upon which their protective action decisions can be based. While the ODAC does not have direct access to plant monitoring information, these data are accessible through the communications link with the TSC. See Tr. 7379-80. The Licensing Board's requirement that the applicants are to install a dedicated computer for the calculation of offsite dose information will strengthen this system further. Tr. 7176, 7607-08. See note 17, *supra*.

b. In terms of monitoring capability, each of the surrounding jurisdictions has the ability (as do the applicants) to send equipped and trained dose monitoring teams to the field. These jurisdictions include Orange County, the City of San Clemente, San Diego County, and Camp Pendleton. Tr. 8606-08, 8919, 9320-21, 9338. There has been significant improvement in this regard since the May 1981 emergency planning exercise, when the Federal Emergency Management Agency (FEMA) criticized the local jurisdictions' monitoring capabilities. LBP-82-39, 15 NRC at 1251-52 and materials there cited.[20]

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[19] At present the EOF and ODAC are located in a fire station in San Clemente several miles from the plant. A new EOF is under construction on company land considerably closer to the plant. Completion is projected for October 1982.

[20] Another training exercise involving these jurisdictions was carried out on April 15, 1982 and evaluated by FEMA. Although FEMA's evaluation material is outside the record of these proceedings, no party objects to our looking at the evaluation for the specific purpose of confirming that the monitoring capabilities have not deteriorated since the time of the evidentiary hearing. See App. Tr. 82. They have not deteriorated. We note this summary statement found on page ii of the evaluation: "Overall, our observations concluded that all jurisdictions reflected an adequate or better capability to respond to an offsite emergency at San Onofre N.G.S."

In sum, the applicants have two facilities, each capable of providing local officials with timely dose assessments from information generated at the nuclear power plant and obtained by offsite monitoring teams.[21] Moreover, each of the offsite jurisdictions has substantial dose monitoring capability that can supplement that of the applicants. We conclude, therefore, that there exists redundant capability to gather and assess radiological consequences information and to provide that information in a timely manner to those officials who must use it to make protective action decisions.

As to intervenors' other argument (offered without support), we are unpersuaded that, as a matter of law, deficiencies in the monitoring and assessment capabilities of offsite jurisdictions cannot be compensated for by the applicants' system. On its face, 10 CFR 50.47(c)(1) allows compensating measures to be undertaken for any emergency planning deficiency. There is no reason why one trained, equipped, and capable offsite radiation monitoring team can not be substituted for another, whether it is that of the applicants or that manned by local government personnel. Moreover, to the extent the requirement for local monitoring and assessment capability evinces a policy judgment that those who bear the responsibility for sheltering or evacuation decisions should be closely involved in the monitoring and assessment process, the record demonstrates that such is already the case. See p. 141, *supra*. Intervenors have not made a strong showing that the Licensing Board's decision on the adequacy of radiological assessment and monitoring capability is erroneous.

D. Other Issues

Intervenors also seek a stay of full power operation based upon the Board's refusal to find that emergency plans for radiological monitoring and assessment in the ingestion emergency planning zone are adequate. The Board termed the record on this matter "decidedly equivocal" and (because of intervenors' failure to propose findings of fact) ruled that the issue was uncontested, to be resolved informally by the staff prior to full power operation. 15 NRC at 1209-11. The Board's hesitancy on the question of adequacy stemmed from the fact that the lead role in emergency planning and implementation for the ingestion EPZ is given to the State. While the applicants had "done about all that might reasonably be expected of them in this area," the Board found that the State plan was still evolving. *Id.* at 1209, 1210.[22]

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[21] We do not mean to suggest that both the Technical Support Center and the Emergency Operations Facility should provide this information to the emergency operations centers. The ODAC in the EOF is to be the primary source of information, once it is functioning. Tr. 7379-80, 8948-49.

Intervenors have not made a strong showing that the Board's disposition of this issue was erroneous. Where a party has not pursued a contention before the Licensing Board through proposed findings of fact, we will not entertain it "for the first time on appeal — absent a 'serious substantive issue.' " *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981). Here, a serious substantive issue is not presented by the Licensing Board's determination to leave the monitoring adequacy question for resolution by the staff. As we have previously remarked: "at the operating license stage, the staff generally has the final word on all safety matters not placed into controversy by the parties." *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 n.31 (1981). This does not work an unfairness or compromise safety. The NRC staff has a continuing responsibility to assure that all regulatory requirements are met by an applicant and continue to be met throughout the operating life of a nuclear power plant.[23] We thus see no basis for a stay based upon the Board's relegation of an uncontested issue to the staff for resolution.

Lastly, intervenors argue that the Licensing Board applied an erroneous standard in judging the adequacy of applicants' emergency plan, violated invervenors' due process rights by not allowing discovery directed to the Federal Emergency Management Agency, and erroneously countenanced *ex parte* communications among the NRC staff, applicants, and FEMA.

These arguments can be disposed of quickly. As to the first, intervenors claim that the Licensing Board adopted "a standard that what there is, is adequate."[24] The argument is offered without elaboration, and we can see no support for it. The Licensing Board's 220-page opinion provides the detailed factual basis and regulatory support for the Board's conclusion that the applicants' emergency plan passes muster. To the extent intervenors mean to argue that the adequacy of the emergency plan must be tested by a cost/benefit analysis, again we are offered no supporting elaboration for such a requirement. In any event, we are of the view, at least preliminarily, that the emergency planning rule itself already accounts for whatever cost/benefit analysis might be necessary. As the applicants rightly remark, "[t]he emergency planning zone concept [in the Commission's rules already] takes into account the broad range of radiological accidents and dose consequences to the public from such accidents."[25] It need not be reanalyzed in each individual proceeding.

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[22] Applicants submitted an extensive study of potential radiological hazards in the ingestion pathway EPZ in the event of a serious accident, a study that included suggested protective response levels for food, milk, and water. Applicants' Exhibit 121. They also presented an emergency response plan for the ingestion pathway. Applicants' Exhibit 143. The latter document was reviewed by the State Health Department and was found to be "excellent, generally well organized, concise and consistent with the RHS [Radiological Health Services]) planning procedures document." Applicants' Exhibit 159. See also Tr. 7388-89. Mr. David F. Pilmer, for the applicant, testified that the State had prepared a draft emergency plan for the ingestion pathway, which assigns responsibilities to the local jurisdictions and designates the State's supporting role. Tr. 11,115. He also indicated that the applicants' plan would guide the ODAC personnel in selecting appropriate pathway samples and evaluating them. Tr. 11,123. The Orange County Emergency plan includes provisions for taking samples of water and foodstuffs, and the County has an agreement with the University of California at Irvine to analyze such samples. Tr. 8982-83.

[23] As we said in *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895-96 (1981), *affirmed sub nom. Fairfield United Action v. Nuclear Regulatory Commission*, No. 81-2042 (D.C. Cir., April 28, 1982):

> [A]n operating license may not issue unless and until this agency makes the findings specified in 10 CFR 50.57 — including the ultimate finding that such issuance "will not be inimical to * * * the health and safety of the public". As to those aspects of reactor operation not considered in an adjudicatory proceeding (if one is conducted), it is the staff's duty to insure the existence of an adequate basis for each of the requisite Section 50.57 determinations [footnote omitted].

[24] Application for Stay of Full Power License (June 1, 1982) at 5.

The claimed violation of due process rights and *ex parte* irregularities also fall far short of a strong showing on the merits. While intervenors now urge that they were denied discovery against FEMA, the record reveals that intervenors never sought to depose any FEMA witnesses. Tr. 643-49. So too, nothing in the Commission's *ex parte* rule (10 CFR 2.780) precludes conversations among parties, none of whom is a decisionmaker in the licensing proceeding. We doubt intervenors will persuade us in the pending appeal that it was improper for FEMA, the applicants, and the staff to confer about defects in the applicants' emergency plan and to suggest ways to correct them.

In sum, intervenors have not made a strong showing that they are likely to prevail on the merits of either the substantive or procedural issues they have raised. To the extent the Licensing Board identified deficiencies in applicants' emergency planning for San Onofre, those deficiencies are being compensated for by other measures now in place. We therefore conclude that intervenors are not threatened with irreparable injury by the prospect of a full power operating license being issued for San Onofre and that the public interest favors denial of their stay application.[26]

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[25] Applicants' Response in Opposition to Application of Intervenors Guard *et al.* for a Stay of Full Power License (June 16, 1982) at 7.

[26] We also note that before a full power license issues, the Commission must complete its immediate effectiveness review pursuant to 10 CFR 2.764(f)(2), and the staff must resolve certain open issues. See p. 143, *supra*.

For all the foregoing reasons, intervenors' motion for a stay pending appeal is *denied*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

Cite as 16 NRC 146 (1982) **ALAB-681**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. John H. Buck
Dr. W. Reed Johnson

In the Matter of **Docket Nos. 50-275-OL**
50-323-OL

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2) **July 16, 1982**

Prior to consideration of a motion by the intervenors to reopen the record in this operating license proceeding to hear assertedly new evidence regarding breakdowns on the quality assurance/quality control program for the plant, the Appeal Board seeks Commission guidance (by way of certification) on whether the Commission intended, in its November 19, 1981 order (CLI-81-30) suspending the Diablo Canyon low-power license and establishing an independent verification program, to deprive the adjudicatory boards of jurisdiction to consider quality assurance and quality control issues involving the plant.

MEMORANDUM AND CERTIFICATION TO THE COMMISSION

On June 8, 1982, the "joint intervenors"[1] in the *Diablo Canyon* operating license proceeding filed with us a motion to reopen the record underlying the Licensing

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[1] Collectively labeled, the joint intervenors are the San Luis Obispo Mothers for Peace, Scenic Shoreline Preservation Conference, Inc., Ecology Action Club, Sandra Silver, Gordon Silver, Elizabeth Apfelberg and John J. Forster.

Board's July 17, 1981 partial initial decision[2] that authorized a license for fuel loading and low-power testing. The joint intervenors' appeal from that low-power decision is currently before us for decision. The joint intervenors now wish to submit "significant new evidence of the recently established breakdowns in the Diablo Canyon Quality Assurance and Quality Control ('QA/QC') program."[3] In addition, the joint intervenors seek vacation of the Licensing Board's QA/QC finding contained in the low power decision[4] and revocation of the Diablo Canyon low-power license. In support of their motion, joint intervenors have filed an extensive affidavit of Richard B. Hubbard, a registered quality engineer, detailing numerous alleged QA/QC problems at the Diablo Canyon facility.

On September 21, 1981, subsequent to the Licensing Board's low-power decision and the Commission's review under the immediate effectiveness rule,[5] the NRC staff issued a license to PG&E for fuel loading and low-power testing up to 5% of rated power for the Diablo Canyon Plant, Unit 1.[6] Thereafter, on November 19, 1981, the Commission suspended, pursuant to 10 CFR 2.202, the low-power license because certain new information raised doubts about the adequacy of PG&E's quality assurance program.[7] In suspending the license, it stated that "[h]ad this information been known to the Commission . . . Facility License No. DPR-76 would not have been issued until the questions raised had been resolved."[8] To resolve the questions surrounding PG&E's QA program the Commission ordered an independent design verification program.[9] That program is now under way.

Governor Edmund G. Brown, Jr., representing the State of California in the operating license proceeding (and also an appellant in the appeal of the Licensing Board low-power decision), supports and joins[10] the joint intervenors' motion to reopen the record. The Governor argues that the motion satisfies the criteria governing the reopening of a closed adjudicatory record and asserts that the "parties now have the right, under the Atomic Energy Act and Administrative Procedure Act, to a hearing on quality assurance at Diablo Canyon given the significant new information that has come to light since the record was closed and the low power license suspended."[11]

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[2] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981).

[3] Joint Intervenors' Motion To Reopen at 1.

[4] *See* LBP-81-21, 14 NRC at 116.

[5] *See* 46 *Fed. Reg.* 28627, 28630 (May 23, 1981); *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-22, 14 NRC 598 (1981).

[6] License No. DPR-76.

[7] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-30, 14 NRC 950 (1981).

[8] *Id.* at 951.

[9] *Id.* at 955-958.

[10] Governor Brown's response to joint intervenors' motion notes that he is not filing a separate motion to reopen the record in order to avoid repetitious filings. Response at 1, n.1.

The staff and PG&E contend that the motion to reopen the record should be denied. The reasons assigned in support of this result, however, differ markedly. The staff recognizes the highly unusual posture of this proceeding and argues that the motion should be denied without prejudice to the refiling of a similar motion at a later time. According to the staff, even though the joint intervenors' motion appears to meet the standards for reopening the record, it would be inappropriate to commence a hearing while the independent verification program in which intervenors are participating is still ongoing. This is so because the present program may resolve intervenors' concerns. The staff also argues that it is unnecessary — and in any event inappropriate in light of the Commission's oversight of the verification program — to revoke the low-power license as joint intervenors have requested.

On the other hand, PG&E argues that the Commission's November 19, 1981 order suspending the low-power license has divested the adjudicatory boards of jurisdiction to reopen the record. According to PG&E, "the Commission has assumed complete jurisdiction over the low-power license . . . to resolve the quality assurance and design issues that have arisen at Diablo Canyon."[12] In effect, PG&E contends that the Commission has already determined to resolve the QA/QC issues at Diablo Canyon outside the adjudicatory process, and the intervenors have no right under Atomic Energy Act and the Commission's regulations to have the record reopened.[13] In the alternative, PG&E asserts that the joint intervenors have failed to meet the requirements for reopening the record.

Before we can reach the question whether joint intervenors' motion meets the standards for reopening the record, we must address the jurisdictional question raised by PG&E. Specifically, we must consider whether the Commission intended its November 19 enforcement order (or, if not, whether it now intends) to deprive the adjudicatory boards of jurisdiction to entertain the joint intervenors' motion regarding the QA/QC issues at Diablo Canyon. In confronting this question, we believe the unusual circumstances at Diablo Canyon make it appropriate to seek guidance directly from the Commission. Accordingly, we certify to the Commission under 10 CFR 2.785(d) the following questions:

> Did the Commission intend its November 19, 1981 order suspending the low-power license for Diablo Canyon, Unit 1, and establishing an independent verification program to deprive the appropriate adjudicatory boards of

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[11] *Id.* at 4.

[12] PG&E Response at 22.

[13] The utility's response does not discuss the threshold question whether its interpretation of the Commission's November 19 suspension order is consistent with the Atomic Energy Act, 42 U.S.C. §2239, the Administrative Procedure Act, 5 U.S.C. §§556 and 557, and the Commission's regulations and case law.

> jurisdiction to consider a motion to reopen the record based on the QA/QC questions regarding Diablo Canyon?
>
> If not, does the Commission now wish to relieve the adjudicatory boards of jurisdiction with regard to the QA/QC issues at Diablo Canyon?
>
> If the Commission has not divested, and does not intend to divest, the adjudicatory boards of jurisdiction over the QA/QC issues at Diablo Canyon what, if any, instructions does the Commission have with regard to timing or other matters raised by the motion to reopen?

We believe certification of these questions to the Commission is warranted for several reasons. First, although the joint intervenors' motion is aimed at the Licensing Board's low-power decision and its underlying record, a similar motion may well be filed with regard to the Licensing Board's full-power decision which is expected to be issued shortly. Therefore, because the issue is likely to arise again in this proceeding, deciding the jurisdictional questions now may ultimately save considerable Commission resources and avoid delay in the licensing process for the Diablo Canyon facility. Second, the Commission's *Statement Of Policy On Conduct Of Licensing Proceedings* encourages the adjudicatory boards to certify to it significant legal and policy questions in order to avoid licensing delays.[14] Here, because the certified matters involve both legal and policy questions that hold considerable potential for causing licensing delay, they are most appropriate for Commission resolution.

We shall hold the joint intervenors' motion to reopen the record in abeyance pending the Commission's determination of the certified questions or until we receive further instructions from the Commission (such as directions to forward the motion to it for decision).

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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[14] CLI-81-8, 13 NRC 452, 456-57 (1981).

Cite as 16 NRC 150 (1982) **ALAB-682**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. W. Reed Johnson
Stephen F. Eilperin

In the Matter of	**Docket No. 30-6931** **Renewal of Byproducts** **Material License No.** **19-08330-03**
ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE **(Cobalt-60 Storage Facility)**	**July 16, 1982**

The Appeal Board reverses a Licensing Board decision (LBP-82-24, 15 NRC 652 (1982)) that held petitioner did not have standing to intervene in this materials license renewal proceeding. The Appeal Board grants the request to intervene, remands the proceeding to the Licensing Board with instructions to allow the petitioner to supplement its petition in accordance with 10 CFR 2.714(b), and orders the proceeding be consolidated with another proceeding involving renewal of the operating license for a research reactor of the same licensee, housed in the same building, if petitioner can present a litigable contention with regard to the materials license. The Appeal Board discusses the statutory requirements for notice in materials licensing cases and recommends that the Commission consider the issue in a rulemaking.

RULES OF PRACTICE: INTERVENTION (INTEREST)

An intervention petitioner who resides near a nuclear facility need not show a causal relationship between injury to its interest and the licensing action being sought in order to establish standing. *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 57 n.5 (1979).

RULES OF PRACTICE: INTERVENTION (INTEREST)

In a materials license renewal proceeding under 10 CFR Part 30 — as in construction permit and operating license proceedings under 10 CFR Part 50 — proximity to a large source of radioactive material is sufficient to establish the requisite interest for standing to intervene. Whether a petitioner's stated concern is in fact justified must be left for consideration when the merits of the controversy are reached.

RULES OF PRACTICE: OFFICIAL NOTICE (INFORMATION IN SEPARATE PROCEEDINGS)

Official notice of information in another proceeding is permissible where the parties to the two proceedings are identical, there was an opportunity for rebuttal, and no party is prejudiced by reliance on the information. See *United States* v. *Pierce Auto Freight Lines*, 327 U.S. 515, 527-30 (1945); 10 CFR 2.743(i).

APPEARANCES

Ms. Elizabeth B. Entwisle, Silver Spring, Maryland (with whom **Ms. Laura W. S. Macklin,** Washington, D.C., was on the brief), for the petitioner, Citizens for Nuclear Reactor Safety, Inc.

Mr. David C. Rickard, Washington, D.C. (**Mr. Robert L. Brittigan,** Washington, D.C., on the brief), for the licensee, Armed Forces Radiobiology Research Institute.

Mr. Bradley W. Jones for the Nuclear Regulatory Commission staff.

DECISION

Before us is an appeal by the Citizens for Nuclear Reactor Safety, Inc. (CNRS), from a Licensing Board decision denying (i) its petition to intervene and accompanying request for a hearing on the renewal of a 10 CFR Part 30 materials license for a cobalt-60 source, and (ii) its request to consolidate the Part 30 proceeding with a companion case involving renewal of a 10 CFR Part 50 license for a TRIGA reactor operated by the same licensee and housed in the same building.[1] For the reasons explained below, we reverse the Licensing Board's decision, grant the request to intervene, and order the proceeding to be consolidated with the Part 50 proceeding if CNRS can present a litigable contention with regard to the materials license.

I. BACKGROUND

On August 28, 1980, the Armed Forces Radiobiology Research Institute (AFRRI) filed with this Commission an application for renewal of its Part 30 byproduct material license. The license authorizes AFRRI to possess up to 320,000 curies of radioactive cobalt-60 in a water-shielded irradiation facility located on the grounds of the National Naval Medical Center in Bethesda, Maryland, primarily for use in radiobiology research. On July 28, 1981, the NRC's Director of Nuclear Material Safety and Safeguards (NMSS) granted AFRRI's application and amended the license to extend until July 31, 1986.

On August 7, 1981, petitioner CNRS, in a letter to the Secretary of the Commission, requested a hearing on the renewal of the license for the cobalt-60 facility. The letter stated that most of petitioner's members live or work in Montgomery County (where the facility is situated) and that at least three members live within five miles of the facility. Petitioner attached an affidavit of one member residing 3.0 miles from the facility.[2] The letter also described a recent incident involving the storage facility in which the mechanism used to raise the cobalt-60 out of its shielding water "jammed," exposing the material "with its lethal gamma radiation" for a period of time lasting from April 22 until May 16, 1981.

On August 29, 1981, CNRS filed with the Commission a petition to intervene and request for a hearing. The petition asserted that renewal of AFRRI's license for the cobalt facility "maintains and exacerbates" the following several hazards to those members of CNRS who reside nearby:

> (1) [c]ontinuous and long-term exposure to low-level gamma radiation emanating from the storage facility,
> (2) the potential exposure to higher doses of gamma radiation resulting from an accident such as the one that occurred at the storage facility between April 22 and May 16, 1981, and
> (3) the potential exposure to higher doses of gamma radiation resulting from acts of terrorism and seizure of some or all of the cobalt inventory.

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[1] A TRIGA is a low power experimental reactor often used for training or research.

[2] Affidavit of Elizabeth French, attached to letter of Elizabeth Entwisle to Samuel Chilk, Secretary of the Commission (August 7, 1981).

CNRS also requested that a hearing on the cobalt-60 license be consolidated with the ongoing proceeding in Docket No. 50-170 for renewal of AFFRI's operating license for the TRIGA reactor. That proceeding, in which CNRS is an intervenor, is currently in the discovery phase. See App. Tr. 22, 49-50.

The Commission directed that a Licensing Board be designated to review CNRS' hearing request. In a decision issued on March 31, 1982, that Board determined that CNRS lacked the requisite standing under 10 CFR 2.714 and denied intervention. LBP-82-24, 15 NRC 652 (1982). Its decision on the hearing request made it unnecessary for the Board to address the related request for consolidation. This appeal followed. Both the licensee and the staff originally urged affirmance of the Board's decision. In a motion filed with us on June 8, however, the staff, with the licensee's support, urged us to remand the proceeding to the Licensing Board so that it could consider certain factual information that was not before it at the time of its decision.

We reverse the Licensing Board's decision. Because we believe CNRS has established its standing to intervene, we see no need to have the Licensing Board rule on the intervention request as the staff urges in its motion. The staff's motion is therefore denied. We also believe no useful purpose would be served by asking the Licensing Board to rule on the consolidation request.

II. ANALYSIS

A. Standing

The Licensing Board essentially determined that CNRS had no standing because, as a factual matter, it failed to show any causal link between the cobalt-60 material and possible injury to its members, *i.e.*, how the gamma radiation emanating from the cobalt-60 might reach its members living near the facility. In *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 57 n.5 (1979), however, a case chiefly relied on by the petitioner, we explicitly rejected the argument that, in order to establish standing, a person who lives near a nuclear facility must " 'particularize a causal relationship between injury to [his or her] interest' and the licensing action being sought."

To distinguish *North Anna*, the Licensing Board reasoned that this case involves radiation from a non-reactor source; thus, a petitioner must show how the radiation would be released to the public in order to establish standing. We disagree. Although our *North Anna* decision involved a spent fuel pool expansion amendment to a Part 50 license, there is nothing in the logic of that decision to suggest that the basic principle that causality need not be shown should be limited to cases involving Part 50 licenses. Indeed, that decision explicitly rejected the argument that our earlier decisions should be restricted to construction permit and operating license proceedings as opposed to license amendment proceedings involving proposed licensing action of more limited geographical reach. *Id.* at 56. Since the concept of geographic proximity is not limited to cases involving Part 50 licenses, the Licensing Board was wrong to require that the petitioner, to demonstrate standing, show in addition a causal relationship between injury and the licensing action being sought.

Our *North Anna* decision not only refutes the basis of the Licensing Board's decision, it also establishes the petitioner's standing in this case. In *North Anna*, one of the members of petitioner's organization who resided on the lakeshore very near the plant asserted that the proposed spent fuel pool expansion might result in ground water contamination, which in turn might affect the well water on her property. These assertions *per se* established the petitioner's standing. We stated:

> [W]e have never required a petitioner in such geographical proximity to the facility in question to establish, as a precondition to intervention, that his concerns are well-founded in fact. . . . Rather, close proximity has always been deemed to be enough, standing alone, to establish the requisite interest.

Ibid. Whether the petitioner's concern was in fact justified, we held, "must be left for consideration when the merits of the controversy are reached." *Ibid.*

The uncontested affidavits filed in this proceeding establish that at least one member of petitioner's organization lives as close as three miles from a substantial source of radioactive material. The inventory of radioactive cobalt at the facility is described as being one of the largest in the United States.[3] This proximity to a large source of radioactive material establishes petitioner's interest. Indeed, in *Duke Power Co.* v. *Carolina Environmental Study Group*, 438 U.S. 59, 74 (1978), the Supreme Court suggested generally that the release of any sort of radiation constitutes an injury in fact to persons in the area surrounding a nuclear facility:

> [T]he emission of non-natural radiation into appellees' environment would also seem a direct and present injury, given our generalized concern about exposure to radiation and the apprehension flowing from the uncertainty about the health and genetic consequences of even small emissions like those concededly emitted by nuclear power plants [footnote omitted].

In sum, petitioner has sufficiently alleged (1) an injury in fact that has occurred or will probably result from the licensee's action and (2) an interest that is arguably — here concededly — within the "zone of interest" of the Atomic Energy Act.

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[3] We also take official notice of uncontested affidavits filed in the TRIGA reactor proceeding establishing that CNRS has at least one member who lives as close as three-tenths of a mile from the AFRRI facility. See Amendment to Petition for Leave to Intervene (January 16, 1981), filed in Docket No. 50-170 (Renewal of Facility License No. R-84). Counsel for petitioner stated at oral argument that this particular individual is still a member of CNRS. App. Tr. 18. Official notice of information in another proceeding is permissible where, as here, the parties to the two proceedings are identical, there was an opportunity for rebuttal, and no party is prejudiced by reliance on the information. See *United States* v. *Pierce Auto Freight Lines*, 327 U.S. 515, 527-530 (1945); 10 CFR 2.743(i).

Portland General Electric Co. (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976).

We recognize that upon further analysis it may turn out that there is no way for the radiation emanating from the cobalt inventory of the AFRRI facility to cause harm to persons living nearby. Nonetheless, neither we nor the Licensing Board can decide, at this early stage of the proceeding, that there is no reasonable possibility that such harm could occur. *North Anna, supra*, 9 NRC at 56. As we recognized in *North Anna*, CNRS' contentions will of course be susceptible to a motion for summary disposition under 10 CFR 2.749. At that point, parties may challenge their bases in fact. *Ibid.*

B. Consolidation

CNRS suggests that consolidation with the TRIGA reactor hearing is both practical and appropriate in the event that it presents a litigable contention. See App. Tr. 26-27, 82-83. The cobalt-60 and TRIGA reactor proceedings involve exactly the same parties. Given that the two facilities are located in the same building, it is reasonable to presume that there will be common questions of fact raised in both proceedings, such as matters relating to emergency planning. See App. Tr. 22, 75. Moreover, the two Licensing Boards are identical. While we appreciate that the hearing provided by section 189(a) of the Atomic Energy Act of 1954, 42 U.S.C. 2239(a), need not necessarily be a formal trial-type adjudicatory proceeding where a materials licensing action is involved,[4] we believe that it is sensible to combine the proceedings in this case in order to avoid duplication of effort and delay. We therefore instruct the Licensing Board to consolidate the proceedings if CNRS can present one litigable contention with regard to the materials license. See 10 CFR 2.716.

C. Notice

The concurring opinion raises an issue for Commission consideration — *i.e.*, the issue of notice — that need not be decided in order to resolve this appeal. We do not decide it, although we agree that the Commission might find it useful to explore it.

The factual circumstances of the instant case — a very large source of radioactive material accompanied by an interest in the safety of the facility by a local civic group that may have been misled somewhat by a Government spokesman[5] — may make this case an attractive vehicle for suggesting a broad requirement for public notice. It is not entirely clear that such a requirement is mandated by law, administratively sensible, or sufficiently important to warrant an expenditure of the Commission's time and effort for all materials licensing matters. We are convinced, however, that the issue is a complicated one from both a legal and practical standpoint, plainly better suited to rulemaking than adjudicatory resolution.

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[4] See *Kerr-McGee Corp.* (West Chicago Rare Earth Facility), CLI-82-2, 15 NRC 232 (1982), *petition for review pending sub nom. City of West Chicago v. Nuclear Regulatory Commission*, No. 82-1575 (7th Cir., filed April 8, 1982).

The Licensing Board's decision is *reversed*, the petitioner's request to intervene is *granted*, and the proceeding is *remanded* to the Board with instructions to allow the petitioner to supplement its petition in accordance with 10 CFR 2.714(b) and, if CNRS can present a litigable contention with regard to the materials license, to consolidate the instant proceeding for hearing with the TRIGA renewal proceeding, Docket No. 50-170.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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[5] See concurring opinion, p. 157, *infra*.

CONCURRING OPINION OF MR. EILPERIN

I fully join in Parts II.A and II.B of the Board's opinion, but write separately to emphasize somewhat more than do my colleagues a recurring notice problem that surfaced in this case. The petitioner learned of the renewal of AFRRI's cobalt-60 license only through the most informal means.[1] The Commission's regulations do not specify any kind of formal notice for materials license actions such as these.[2] And in the past, the Commission has suggested that there may be no notice requirement flowing from any other source of law. However, the Commission has been hesitant to decide the question finally.[3]

Because the notice question is not directly in issue in this case (see n.1, *supra* (concurring opinion)), this Board also is not required to decide what kind of notice must be provided for a materials license application. I raise the question only because I think the issue is important and I wish to prompt further Commission consideration of it.

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[1] On February 4, 1981, petitioner's counsel was informed by the NRC staff that action on the materials license renewal would await a final decision on AFRRI's application for a renewal of its TRIGA reactor operating license. On August 6, 1981 because counsel was about to appear on a radio talk show, she telephoned the NRC to make sure her understanding of the status of the materials license application was current. She was then told that the license was about to issue. In fact, it had issued more than a week earlier, on July 28. App. Tr. 9-10; letter of Elizabeth Entwisle to Samuel Chilk (August 7, 1981), attached as Appendix A to CNRS Brief in Response to Arguments in Opposition to its Appeal (May 21, 1982).

The notice question is not directly in issue in this case because the Licensing Board ruled that a party is excused from the requirement of timely requesting a hearing where it relied on the staff's advice that it could await further staff action before making a formal hearing request. 15 NRC at 658.

Because in a materials license case no formal notice is given of the prospective licensing action, what constitutes a "timely" request for a hearing is something of a puzzle. Here, where the request for hearing followed on August 7, immediately after accurate informal notice was given, there is no doubt the hearing request was timely. In this connection, I am constrained to note my disagreement with the Licensing Board's apparent theory that, but for the staff's misinformation, the petitioner's hearing rights would have evaporated because the issuance of a materials license renewal is not a "proceeding" within the meaning of Section 189(a) of the Atomic Energy Act. 15 NRC at 656-57. The Commission's *Kerr-McGee* decision, note 4, *supra*, establishes that an interested person has a right to a hearing on a materials license application. See p. 158, *infra*. Those rights cannot be cut off as untimely exercised where no notice of any kind is provided.

[2] *Kerr-McGee*, *supra*, 15 NRC at 244-46.

[3] In *Edlow International Co.* (Agent for the Government of India to Export Special Nuclear Material), CLI-76-6, 3 NRC 563, 581 (1976), the Commission referred to the petitioners' concession, which it termed accurate, "that no legal obligation exists to give public notice of materials license applications, either for export or domestic use." Yet at another point in that opinion the Commission stated (*id.* at 579):

> The whole question of procedures to be followed in these matters, including consideration of the issues of public notice and timeliness is under current Staff review, which we anticipate may result in amendments to the Commission's Rules of Practice at an early date. Meanwhile, in evaluating what type of public notice is appropriate for nuclear material export licenses, we believe that a thirty-day notice period would be reasonable, unless in a particular case a shorter period is required. Based on our past experience, it is questionable whether there will be sufficient sustained interest in the numerous materials export licenses considered by the NRC each year, to warrant publication of every license application in the *Federal Register*. Pending completion of our overall study, we believe adequate public notice will be provided by posting applications received in the Commission's Public Document Room (PDR) together with a periodic mailing of recent filings to any requester with a particular interest in receiving them.

Commission regulations that implement Section 304(b) of the Nuclear Non-Proliferation Act of 1978, Pub. L. No. 95-242, 92 Stat. 120, put in place a formal notice system for export license applications. See 10 CFR 110.70. See p. 158, *infra*.

It is clear to all that Section 189(a) of the Atomic Energy Act in terms affords interested persons an opportunity to request some kind of hearing with regard to *all* licensing actions, including actions involving materials licenses. The Commission has squarely held this in its recent *Kerr-McGee* decision. 15 NRC at 247. Given this premise of a statutory right to a hearing, it would seem to follow that some kind of notice is required so that the right to a hearing is not lost by inadvertent default. *Mullane* v. *Central Hanover Bank and Trust Co.*, 339 U.S. 306, 314 (1950). See also *Eisen* v. *Carlisle & Jacquelin*, 417 U.S. 156, 173-175 (1974); *Walker* v. *Hutchinson*, 352 U.S. 112, 115 (1956); *North Alabama Express, Inc.* v. *United States*, 585 F.2d 783, 789 (5th Cir. 1978). *But cf. Sholly* v. *Nuclear Regulatory Commission*, 651 F.2d 780, 787 n.20 (D.C. Cir. 1980), *rehearing en banc denied*, 651 F.2d 792, *cert. granted*, 101 S. Ct. 3004 (1981).

I recognize that in devising a notice system the Commission must take into account the extensive number of licensing actions acted upon each year.[4] In this regard, the system the Commission adopted in implementation of the Nuclear Non-Proliferation Act of 1978 may prove instructive. The Commission places a copy of every export license application in the Public Document Room and periodically mails a list of these applications to persons or organizations who have requested notification. 10 CFR 110.70(a), (c). In addition, the Commission publishes in the *Federal Register* notice of receipt of what it considers major applications. 10 CFR 110.70(b). An interested person may file a petition to intervene or request a hearing on any export license application, major or minor, within 30 days of notice in the *Federal Register* or 15 days if noticed by placement in the Public Document Room. 10 CFR 110.82. Despite the hundreds of export license actions taken each year,[5] it is my understanding that this notice system has not proved to be either onerous or unworkable. Nor has it led to a plethora of hearing requests, let alone frivolous hearing requests.

A similar system may be suitable for materials license applications. While the number of materials license actions is greater, given their basically noncontroversial nature, it is highly problematical that the Commission would be inundated by requests for periodic mailings. Moreover, because the number of major materials license actions is no doubt quite small to vanishing, the Commission could largely (or perhaps completely) dispense with providing notice in the *Federal Register*. The system could also be structured to discourage frivolous hearing requests by requiring a thorough statement of the petitioner's interest and making full use of the Commission's authority to hold legislative rather than adjudicatory hearings. See generally *Kerr-McGee, supra*, 15 NRC at 247-62.[6]

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[4] In fiscal year 1980, the NRC took 4,614 actions on Parts 30, 40 and 70 materials licenses. Approximately one-fifth of these (885) were license renewals and three-quarters (3,008) concerned license amendments. The remainder (721) were applications for new licenses. U.S. Nuclear Regulatory Commission, 1980 *Annual Report*, at 110.

[5] See 1980 *Annual Report*, note 4, *supra*, at 171.

In short, I think the practical problems of a notice system for materials license applications are probably far less than my colleagues imagine. More importantly, I think the legal issue is far clearer than they intimate. The matter is obviously one for study and decision by the Commission, most appropriately through rulemaking.

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[6] Where renewal requests are involved, the licensee, of course, may continue to operate under its old license until the renewal request is processed. Administrative Procedure Act, Section 9(b), 5 U.S.C 558; 10 CFR 2.109.

Cite as 16 NRC 160 (1982) **ALAB-683**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman

In the Matter of

Docket Nos. 50-522
50-523

PUGET SOUND POWER AND LIGHT COMPANY,
et al.
(Skagit/Hanford Nuclear Power Project,
Units 1 and 2)

July 27, 1982

Acting under the authority of 10 CFR 2.787(b), the Appeal Panel Chairman dismisses an interlocutory appeal by intervenors of the Licensing Board's rejection of certain of their contentions.

RULES OF PRACTICE: INTERLOCUTORY APPEALS

A person may take an interlocutory appeal from an order entered on his or her intervention petition only where the order has the effect of denying the petition in its entirety. 10 CFR 2.714a.

APPEARANCE

Mr. Terence L. Thatcher, Portland, Oregon, for the intervenors, National Wildlife Federation and Oregon Environmental Council.

MEMORANDUM AND ORDER

In a July 6, 1982 memorandum and order (unpublished), the Licensing Board ruled on the admissibility of, *inter alia*, the contentions jointly advanced by the intervenors National Wildlife Federation and Oregon Environmental Council in this construction permit proceeding. Although several were admitted to the proceeding, Contention 5 was rejected. The intervenors seek to appeal that rejection under 10 CFR 2.714a. Their appellate papers also complain of what they deem to have been the implicit rejection of one of the bases assigned for accepted Contention 3.

It would appear that intervenors' counsel has not read Section 2.714a with care. By its express terms, that Section permits a person to take an interlocutory appeal from an order entered on his or her intervention petition only in circumstances where, unlike here, the order has the effect of denying the petition *in its entirety*. Accordingly, the appeal at bar must be, and hereby is, summarily *dismissed*. *Texas Utilities Generating Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-599, 12 NRC 1, 2 (1980), and cases there cited.[1]

It is so ORDERED.

FOR THE APPEAL PANEL
CHAIRMAN

C. Jean Shoemaker
Secretary to the
Appeal Panel

This action was taken by the Appeal Panel Chairman under the authority of 10 CFR 2.787(b).

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[1] If intervenors are dissatisfied with the initial decision ultimately rendered by the Licensing Board in the proceeding, they will be entitled to take an appeal from it under 10 CFR 2.762(a). On that appeal, they will be free to raise the matter of the Licensing Board's threshold treatment of Contentions 3 and 5.

Cite as 16 NRC 162 (1982) **ALAB-684**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Dr. John H. Buck
Thomas S. Moore

In the Matter of **Docket Nos. 50-329-OM&OL**
50-330-OM&OL

CONSUMERS POWER COMPANY
(Midland Plant, Units 1 & 2) **July 27, 1982**

The Appeal Board dismisses without prejudice an intervenor's purported appeal from a Licensing Board order, LBP-82-35, 15 NRC 1060 (1982), which authorized certain interim amendments to the Midland construction permits pending subsequent issuance of the Board's partial initial decision. The Appeal Board construes the intervenor's filings as a complaint against staff's compliance with and implementation of the Licensing Board's order, rather than the order itself, and leaves the matter to the intervenor to present to the Licensing Board.

RULES OF PRACTICE: JURISDICTION OF BOARDS

Issues relating to compliance with and implementation of a Licensing Board order, rather than the order itself, should be presented to the Licensing Board in the first instance, rather than to the Appeal Board.

RULES OF PRACTICE: TIME LIMITS FOR FILING EXCEPTIONS

Although the time limits established by the Rules of Practice with regard to appeals from Licensing Board decisions and orders are not jurisdictional, Appeal Board policy is to construe them strictly. *Nuclear Engineering Co.* (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-606, 12 NRC 156, 160 (1980). Hence, untimely appeals are not accepted absent a demonstration of "extraordinary and unanticipated circumstances." See 10 CFR Part 2, Appendix A, IX(d)(3).

APPEARANCES

Ms. Barbara Stamiris, Freeland, Michigan, intervenor *pro se*.

Mr. Michael I. Miller, Chicago, Illinois, for the licensee-applicant, Consumers Power Company.

Mr. Michael N. Wilcove for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

1. Intervenor Barbara Stamiris purports to appeal the Licensing Board's April 30, 1982, memorandum and order, which authorized, pending subsequent issuance of the Board's partial initial decision, certain interim amendments to the construction permits for the two-unit Midland facility. See LBP-82-35, 15 NRC 1060 (1982). Exceptions to the Board's memorandum and order were due May 18, 1982. *Id.* at 1073; 10 CFR 2.762(a), 2.710.[1] Ms. Stamiris' appeal was dated June 7, 1982, and, by her own admission, was untimely. In one letter accompanying her appeal and another dated June 14, she asserts that there is good cause for our consideration of her late appeal. We treated Ms. Stamiris' letters as a motion for leave to file an appeal out of time and requested responses from the other parties. Order of June 22, 1982 (unpublished). Consumers Power and the NRC staff each replied, opposing intervenor's request. Consumers Power also moved to strike the appeal, but Ms. Stamiris did not respond. We grant the motion and dismiss the appeal for the reasons discussed in point 3 below.

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[1] Our unpublished order of June 22, 1982, incorrectly stated that exceptions were due May 13, 1982.

2. We need not repeat the Licensing Board's thorough discussion of the background and events leading to its authorization of interim amendments to the Midland construction permits. See 15 NRC at 1060-71. Suffice it to say that the Board felt compelled to impose short-term conditions now, before completion of hearings and issuance of its initial decision, on the ongoing soil-remedial activities by Consumers Power under its existing permits. Essentially these conditions require Consumers Power to obtain explicit staff approval before undertaking specified soil-related activities. *Id.* at 1072-73. But for the Board's order, Consumers Power would have been free under its original permits to engage in these activities, without any form of staff approval, while the soil settlement matter is still being litigated. *Id.* at 1063. In ordering this increased staff oversight of the construction at Midland, the Board expressly refrained from "dictat[ing] the manner in which the Staff may exercise its review" and excluded those construction activities already approved by the staff but apparently not yet undertaken. *Id.* at 1071.

On May 26, 1982, the staff issued the amendments to the Midland construction permits. Their terms track almost verbatim the conditions imposed by the Board's order. See Construction Permit No. CPPR-81, Amendment No. 3, and Construction Permit No. CPPR-82, Amendment No. 3 (May 26, 1982); 15 NRC 1072-73. On the preceding day, the staff notified Consumers Power that it was discontinuing its prior practice (with which the utility had voluntarily complied) of approving each individual construction step in favor of "review . . . as an integrated package." The staff also indicated, however, that "those [activities] for which staff review was substantially completed as of April 1, 1982, are . . . approved," and identified Phase 2 underpinning activities as falling within that category. Letter from Darrell G. Eisenhut, Director, NRC Division of Licensing, to J. W. Cook, Vice President, Consumers Power Company (May 25, 1982) at 1. It is apparently this staff letter and the May 26 permit amendments that have triggered Ms. Stamiris' appeal.

3. After considering the pleadings in this matter, including Ms. Stamiris' letters and tendered brief, we believe the real issue at hand is not whether intervenor has satisfied the standard for our acceptance of an untimely appeal, but rather whether intervenor, in fact, appeals any Licensing Board action. To be sure, Ms. Stamiris states in her June 14 letter that this "is an appeal against the Board's 4/30/82 Memorandum." She also gives the reasons in her June 7 and June 14 letters why she believes she has established "good cause" for the tardiness of her appeal. But those reasons, as well as the accompanying brief on the merits of her appeal, convince us that intervenor's complaints are not really directed against the Licensing Board's April 30 decision. Rather, the alleged harm she seeks to redress by appeal is certain staff action that has occurred since the Board's order.

For example, in urging acceptance of her late-filed appeal, intervenor states that she viewed the Licensing Board's decision as "an attempt to strengthen the controls on Consumer[s'] soils remedial work" and "trusted" the NRC staff to abide by an earlier "commitment" to refrain from a piecemeal review of the utility's soil-remedial work. But after she received copies of the permit amendments and the staff's May 25 letter "granting concurrence for Phase [2] remedial work," intervenor "realized that the hearing process and its ultimate outcome [were] being prejudged by the actions that were taking place under the terms of the [amendments,]" and she "began work on this appeal immediately." Stamiris Letter to Appeal Board (June 7, 1982). See also Stamiris Letter to Appeal Board (June 14, 1982). Moreover, intervenor's brief contains no argument directed to the Licensing Board's April 30 decision. Instead, it is devoted principally to her concerns about the permit amendments themselves "as already implemented by the NRC in their recent approval of Phase [2] underpinning work." Intervenor Appeal (June 7, 1982) at 2. See also *id.* at 4, 7, 10, 11.

Thus, intervenor's appeal raises issues relating to staff compliance with and implementation of the Board's order, rather than the order itself. We believe that these are matters best left to the Licensing Board's judgment in the first instance. This is particularly so, given Ms. Stamiris' concern that the staff's actions may have prejudiced the future soil-related hearings to be conducted by the Board and foreclosed consideration of some Board members' questions. *Id.* at 2, 3, 7, 10; Stamiris Letter (June 7, 1982).[2] Intervenor has erroneously brought her arguments to us instead of the Licensing Board. Accordingly, the appeal is dismissed without prejudice to intervenor's presentation of these same arguments to the Licensing Board.[3]

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[2] We note in passing, however, that many of intervenor's arguments are not very persuasive. For instance, Ms. Stamiris fails to explain *how* the future Board hearings will be compromised, particularly given the Board's many references to the future evidentiary hearings and the following statement:

> [w]e stress that in our forthcoming Partial Initial Decision we will reexamine the terms and conditions which we are here imposing on an *interim* basis. At that time, however, we may *reaffirm, expand or remove* them.

15 NRC at 1072 (emphasis added). Further, to the extent that intervenor objects to the manner in which the staff is conducting its review, (1) the Board expressly gave the staff discretion in that regard, as Ms. Stamiris acknowledges in her letter of June 7, and (2) at least for future remedial activities, the staff nonetheless appears to have committed itself to the integrated review intervenor wants. See *id.* at 1071; Eisenhut Letter, *supra*, at 1.

[3] If we have misperceived the nature of intervenor's appeal and it is, in fact, directed to the Board's April 30 decision, we then dismiss it for failure to demonstrate the "extraordinary and unanticipated circumstances" that warrant acceptance of an untimely appeal. See 10 CFR Part 2, Appendix A, IX(d)(3). See also *Nuclear Engineering Co.* (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-606, 12 NRC 156, 160 (1980), where we held that, [a]lthough the time limits established by the Rules of Practice with regard to appeals from Licensing Board decisions and orders are not jurisdictional, our general policy has been to enforce them strictly." See, *e.g.*, *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-547, 9 NRC 638 (1979); *Iowa Electric Light & Power Co.* (Duane Arnold Energy Center), ALAB-108, 6 AEC 195 (1973).

The reasons intervenor gives (see pp. 164-165, *supra*) do not present the extraordinary and unanticipated circumstances necessary for us to entertain her late appeal from the *Board's order*. Further, there could be no misunderstanding as to intervenor's right to appeal or the time for doing so, because the order itself clearly stated that any party could file exceptions within 10 days of service. 15

(Continued)

The motion to strike of Consumers Power is *granted*, and the appeal of Barbara Stamiris from the Licensing Board's April 30, 1982, memorandum and order is *dismissed*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

NRC at 1073. Compare *Sheffield*, *supra*, 12 NRC at 159-160. We share intervenor's interest that the soil-related problems at Midland be fully explored and agree that issues of public health and safety must be of "paramount" concern. Stamiris Letter (June 7, 1982). But she has failed to convince us that the Board's April 30 order somehow puts those goals in jeopardy so as to warrant acceptance of her late appeal.

Finally, we do not decide whether Ms. Stamiris' appeal and brief should also be striken for failure to conform to the requirements of 10 CFR 2.762(a), (c), and (d). See 10 CFR 2.762(f).

Atomic Safety and Licensing Boards Issuances

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Cite as 16 NRC 167 (1982) LBP-82-51

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James L. Kelley, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Foster

In the Matter of **Docket Nos. 50-413**
50-414

DUKE POWER COMPANY, *et al.*
(Catawba Nuclear Station,
Units 1 and 2) **July 8, 1982**

The Licensing Board overrules various objections to its Order issued following a prehearing conference pursuant to 10 CFR §2.751a. The Board also denies requests for referral of certain issues to the Appeal Board.

RULES OF PRACTICE: SECURITY PLANS

Where an Intervenor seeking to challenge an Applicant's security plan does not produce a qualified expert to review the plan and declines to submit to a protective order, its vague contentions must be dismissed for failure to meet conditions that could produce an acceptably specific contention.

MEMORANDUM AND ORDER

(Overruling Objections Following Prehearing Conference, Denying Requests For Referral to the Appeal Board, and Addressing Certain Related Questions)

INTRODUCTION

Pursuant to 10 CFR 2.751a, the Applicants, the NRC Staff and Intervenors Palmetto Alliance (Palmetto) and Carolina Environmental Study Group (CESG) filed objections to various rulings in our Memorandum and Order of March 5, 1982 (LBP-82-16, 15 NRC 566), or, in the alternative, sought referral of some of those rulings to the Appeal Board. In our Memorandum and Order of June 30, 1982 (LBP-82-50, 15 NRC 1746) we rejected the Applicants' and the Staff's objections to our rulings on specificity of contentions and referred those rulings to the Appeal Board. We deal now with the Applicants' other objections, the objections of the Intervenors, and with certain related questions.

A. Applicants' Remaining Objections

1. Financial Qualifications

The Applicants, supported by the Staff, ask us to dismiss Palmetto Contentions 24 and 25, relating to the financial qualifications of small owners and to costs of decommissioning. They point out that these contentions are barred by new rules the Commission adopted shortly after our March 5 Order. *See* 47 *Fed. Reg.* 13750. We agree that these contentions are barred by the new rules; they are dismissed.

2. Service of Documents

The Applicants object to that portion of our Order that requires service on all parties of copies of relevant documents generated by the Applicants or the Staff. LBP-82-16, 15 NRC 590-91 (1982). We adhere to our Order and reject the Applicants' objections for the reasons stated by the Staff at pp. 17-19 of their Response dated April 20, 1982. We see no reason to refer this part of our Order to the Appeal Board.

3. Corbicula

Palmetto 43 (CESG 17) concerns possible effects of *Corbicula* on the performance of the cooling tower system. Our Order of March 5, 1982 admitted this contention provided it was clarified and made much more specific following discovery. Applicants object, believing that the Board has placed a burden on them to provide the necessary specificity. Applicants have misinterpreted the Board's ruling. The burden for clarification and specificity of this contention remains with Intervenors. It was evident to the Board from the pleadings, the CP-FES and the FSAR that:

(a) *Corbicula* is present and may infest the cooling tower system;
(b) fouling of the Nuclear Service Water System by *Corbicula* is of sufficient concern to require control measures;
(c) precisely where and to what extent fouling will occur is speculative. If the consequences of such fouling are safety related this issue should clearly be litigated.

Our March 5, 1982 Order did not say that the lack of specificity in the contention was grounds for rejection under 10 CFR 2.714. Rather we have attempted to focus discovery so that it would be clear as to whether the kind and magnitude of the consequences of a clam infestation would justify litigation. We reaffirm our conditioned admission of this contention. Intervenors have the burden of clarification and greater specificity.

B. Intervenors' Objections[1]

1. The Burden of Further Specifications

The Intervenors object to the conditional acceptance of most of their contentions and to the "burden of further specification" later when relevant information becomes available, or, in some cases, when discovery is complete. We reject this objection. Given the availability of information, the Commission's requirement of specificity in contentions is certainly reasonable. Assuming as we do the seriousness of the Intervenors' intentions, they will have to read and analyze relevant material as it becomes available. In that context, it is not unfairly burdensome to require them to add more specificity to their presently vague contentions. Indeed, the burdens involved in that task will be minor compared to those involved in the eventual litigation of this case.

2. Serious Accidents (Palmetto 5, 9, 31; CESG 2)

Although these contentions were rejected by the Board for lack of specificity, the door was left ajar for possible consideration of a site-specific credible accident at Catawba. Intervenors now return with descriptions of accidents which presumably could occur at any pressurized water reactor. The Applicants and the Staff are now asked to comment on whether any of these scenarios may form the basis for an acceptable contention. Comments shall be filed by July 30, 1982.

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[1] The Intervenors Palmetto and CESG filed a single joint response and objections to the March 5 Order. Charlotte-Mecklenburg Environmental Coalition did not file objections.

3. *Operator Qualifications*

We admitted conditionally Palmetto's Contention 8 on operator qualifications, subject to the responses we called for concerning whether this contention might be the equivalent of an impermissible attack on a Commission rule. Palmetto and the Staff urge the admission of this contention. The Applicants see it as an attack on the rules. This is a rather close question because the Commission did not make its intentions clear in its most recent rulemaking on the subject. However, we find the Staff's arguments persuasive and endorse the following summary of those arguments:

> [W]hile litigation of Palmetto Contention 8 might ordinarily be barred as a challenge to the operator licensing requirements in 10 CFR Part 55, the Commission has, through its Revised Statement of Policy on TMI Action Plan requirements, authorized the litigation of such a contention and that authorization is not affected by the fact that TMI Action Plan requirements are now the subject of rulemaking. Palmetto Contention 8 may properly be admitted and litigated in this proceeding. Staff Response at 7.

Palmetto Contention 8 is now admitted unconditionally.

4. *Cost vs. Benefits*

The Intervenors object to our disallowance of Palmetto's Contentions 11, 12, 13, 30, 33, 34 and 39 and CESG's Contentions 1, 5, 6 and 12 concerning need for power, certain broad economic issues and financial factors said to affect the NEPA cost/benefit balance struck at the construction permit stage. We have considered their objections and adhere to our prior rulings. Most of the Intervenors' objections are, in substance, objections to the Commission's recently adopted rule barring litigation of need for power and alternative power sources in operating license cases.

In the alternative, the Intervenors ask us to "certify" (refer) to the Commission or Appeal Board the cost/benefit contentions we do not admit. Referral is an exception to the normal rule against interlocutory review of Licensing Board orders. The burden is on the movant to demonstrate that an issue meets established standards for referral (discussed briefly at 15 NRC 1754 of our Order of June 30, 1982). Here, the Intervenors simply ask for referral without any attempt to meet that burden. We see no obvious reasons for referral. The Staff opposes referral and makes a persuasive showing that referral standards are not met. Staff Response of April 28, 1982 at 9-10. The Intervenors' request for referral of the admissibility of these cost/benefit contentions is denied. Following this denial, the Intervenors may seek directed referral from the Appeal Board. *See Public Service Co. of New Hampshire, et al.* (Seabrook Station), ALAB-271, 1 NRC 478, 482 (1975).

5. *Spent Fuel Transportation and Storage (Palmetto 14-17, 38; CESG 11)*

Palmetto has five contentions and CESG one contention about these subjects. Their concerns involve not only the spent fuel storage facilities at Catawba but also the potential transport of spent fuel from other Duke Power Company nuclear power stations to Catawba. In our Order of March 5 this Board asked the Applicants and the Staff to address questions about Duke's plans to use Catawba facilities to store fuel from other stations and to comment on our jurisdiction over applications to store or transport spent fuel from other facilities. Although, as the parties' submissions show, this Board lacks jurisdiction over shipment of spent fuel from other Duke facilities, we must consider the environmental impacts associated with its transport to, and storage at Catawba.

Palmetto Contention 14 asks for ". . . a full description and detailed analysis of the environmental effects of the transport of spent fuel shipments to the Catawba Plant from other Duke Power Company facilities and of the contribution of such effects to the environmental costs of licensing Catawba . . .", asserting that Summary Table S-4 does not apply because the destination of the spent fuel in transit would be the Catawba facility rather than a fuel reprocessing plant. The Board, in its Order of March 5, 1982, disallowed this contention because no reason has been advanced as to why Table S-4 values would not adequately describe the environmental effects.

Intervenors object (Response and Objections to Order Following Prehearing Conference, March 31, 1982) to this rejection, citing the wording associated with 51.20(g)(1) and Table S-4 which relates to the method of shipping. Intervenors do not assert that the method of transport will be different than that covered in 51.21(g)(2)(v) (truck, rail, or barge). No new information has been presented that invalidates the kind or magnitude of effects presented in Summary Table S-4. Therefore, we reaffirm our rejection of this contention.

Palmetto Contention 15 asserts that ". . . the favorable cost-benefit balance struck at the construction permit phase . . ." is compromised by expanding the Catawba fuel storage facilities to accommodate fuel from other Duke stations, and by the transport of such fuel. We admitted this contention provided the words "Away From Reactor" were stricken. We need also to confine this issue to the action now before us, which is a license to operate the constructed plant. Palmetto Alliance may resubmit this contention based on the OL Environmental Statement, when issued, and subject to the conditions of our Order of March 5, 1982 (LBP-82-16, 15 NRC 580-81).

Palmetto Contention 16 asserts that Applicants have not demonstrated their ability to transport and store irradiated fuel assemblies from other Duke facilities so as to provide reasonable assurance that the health and safety of the public is not endangered. In our Order of March 5 we admitted this contention conditionally, subject to revision in light of information we received in response to our questions. We now exclude the portion of this contention which relates to the transport of irradiated fuel because the safety aspects of this activity are controlled by 10 CFR Parts 71 and 73, and by DOT regulations and is outside the scope of this hearing. The portion of this contention which relates to the storage of irradiated fuel assemblies from other Duke facilities at Catawba is admitted.

Palmetto Contention 17 is concerned with provisions for safe storage of irradiated fuel at Catawba after expiration of the license for the facility. Our March 5 Order rejected this contention because it lies beyond the scope of this proceeding and it is also the subject of current Commission rulemaking. Intervenors object to this rejection citing the Court of Appeals in *Minnesota* v. *NRC*, 602 F.2d 412 (D.C. Cir. 1979). As pointed out in our Order of March 5, the Commission has initiated rulemaking on this generic issue and the Appeal Board has subsequently held that this topic is not litigable in individual proceedings pending the outcome of the completion of the "waste confidence" rulemaking. *Public Service Electric and Gas Co., et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 68-69 (1981). Our rejection of this contention is reaffirmed and Intervenors' request for certification is denied.

Palmetto Contention 38 (CESG 11) concerns enlargement of the spent fuel pool without an amendment to the construction permit and the associated increase in the source term. Our Order of March 5 rejected these contentions because they were in the nature of legal argument or concerned issues we conditionally admitted elsewhere (Palmetto Contention 16). Intervenors object to this rejection, but provide no specific argument as to why the Board should reconsider its decision. Rejection of these contentions is reaffirmed.

6. ECCS (Palmetto Alliance 19, 45; CSEG 19)

This contention concerns a postulated malfunctioning of the Catawba ECCS caused by "dropping of the neutron shield from its support" and a resulting "blockage of the coolant system flow path." We previously rejected this contention for lack of specificity. The Intervenors object to that ruling and now point more specifically to portions of the Catawba and McGuire records where a "neutron shield" (also called a "lower core barrel") is referred to. However, these references do nothing to clarify the manner in which the postulated accident might occur. We therefore adhere to our earlier ruling.

7. ALARA

Palmetto Contention 20 postulates that occupational exposures will not be as-low-as-reasonably achievable because certain equipment might require extensive repairs and because the FSAR does not adequately consider exposure that might occur. Our Order of March 5, 1982 rejected this contention because it failed to provide any reasonably specific basis for the assertion that 10 CFR 20.1 requirements will not be met. Intervenors object to this rejection but still provide no specific reason why the applicable rules will not be met. We reaffirm our rejection of this contention.

8. Control Room Design (Palmetto 22, 42; CESG 16)

These contentions concern control room design and an interface with human factors, particularly water-level indicators. They were denied in part and admitted conditionally in part in our March 5 Order. Intervenors object to our partial denial of Palmetto 22 and reference certain vaguely identified documents. Finding no new reason to modify our earlier ruling, we decline to do so.

9. ATWS (Palmetto 28)

This matter was previously rejected by the Board on the basis of a recent and controlling Commission statement. Completely ignoring the Commission statement and alluding to matters of which the Commission is already aware, the Intervenors object. The Board's earlier position on this generic issue is reaffirmed.

10. Systems Interaction (Palmetto 29)

This contention voices concern that unrecognized interactions of systems could result in plant conditions that compromise the safety and health of the general public. Our Order of March 5, 1982 rejected this contention because of its vagueness. Intervenors object to this rejection, pleading their lack of technical qualifications to be specific in respect to Catawba. The Board agrees that the general subject is of safety significance, but in the absence of a specific basis for litigation the contention must be disallowed.

11. Risk Evaluation (Palmetto 32, CESG 3)

These contentions concern risk analyses and introduce a concept of "totality of risk" in terms of fatalities arising from apparently simultaneous accidents at the

Catawba and McGuire power stations. The contentions were rejected as not being site-specific to Catawba. The Board considers bringing McGuire into the statement as not affecting the argument. No elaboration has now appeared on the alleged fault in the analysis by the Staff of potential risks to the public, the principal thrust of these contentions. The Board retains its earlier position.

12. Emergency Planning (Palmetto 35, 37; CESG 8, 10)

The Intervenors lodge a rather cryptic objection to our rulings on Palmetto Contention 35 (CESG 8). We take it they are referring to our ruling on the second sentence of the contention, which appeared to call for a 30-mile radius for the plume exposure pathway emergency planning zone. We continue to view this as an impermissible attack on the rule establishing a zone radius of "about 10 miles." We are now asked to "certify" this contention for determination by the Commission or Appeal Board.

We are not sure whether this request to "certify" means to send up our ruling for interlocutory appellate review pursuant to 10 CFR 2.751a(d) or to certify the matter to the Commission for determination whether a waiver should be granted, pursuant to 10 CFR 2.758(d). We are doing neither, because neither of the quite different kinds of showings required of the movant have been made by the Intervenors here. *See* 15 NRC 1754 of the Order of June 30, 1982; 10 CFR 2.758(b).

As to the crisis relocation contention (Palmetto 37, CESG 10), we adhere to our prior ruling. The request for "certification" (referral) is also denied for lack of an appropriate showing.

13. EMP (Palmetto 41; CESG 15)

This contention asserts that the design and construction of Catawba does not give appropriate consideration to an electromagnetic pulse (EMP) which might knock out power grids, communications systems, control systems, and other electronic equipment. Our Order of March 5, 1982 disallowed this contention as an impermissible challenge to Commission regulation 10 CFR 50.13. Intervenors object, asserting that an EMP could be caused by the detonation of nuclear weapons short of war, and request certification of the issue to the Appeal Board or Commission. The wording of 10 CFR 50.13 includes ". . . (b) use or deployment of weapons incident to U.S. defense activities. . ." and we remain unconvinced that the contention is outside of this rule. Although we are disallowing this contention as an impermissible challenge to the Commission's rules, the potential disruption of operations at nuclear power stations and all other types of facilities that depend upon sophisticated electronic systems must be viewed as potentially serious. Because of the pervasive nature of the problem, policies and possible mitigative actions need to be developed on a generic basis rather than piecemeal through litigation in individual licensing actions.

The Commission is aware of the EMP problem and has research under way to better define the nature and magnitude of this issue (SECY-81-641). This research is a prerequisite to the formulation of a Commission policy or rule, should this be necessary.

14. Embrittlement (Palmetto 44; CESG 18)

We previously rejected this contention for lack of specificity. Intervenors have included clarifications of this contention in their objection to our ruling such that it now meets specificity standards. It is therefore admitted as clarified. The clarified contention was filed in March 1982, some four months late under 10 CFR 2.714(a)(3). However, we do not believe that any party can claim prejudice from the Board's now considering the clarified contention on its merits, in view of subsequent slippages of more than four months in construction and hearing document schedules. We caution the Intervenors, however, that any contentions filed hereafter and not based on new information must be accompanied by a showing with reference to the five factors in 10 CFR 2.714(a)(1).

15. Releases to Lake Wylie (Palmetto 46; CESG 20)

This contention is concerned with the accidental release of "radioactivity" to Lake Wylie. Our Order of March 5, 1982 disallowed the contention because of vagueness and thus not meeting the requirements of 10 CFR 2.714(b). Intervenors object to this rejection asserting that ". . . it is appropriate to inquire into potential Catawba equipment design to deal with a [Oconee-like] non-planned release." Since Sections 3.5, 5.2, 11.2 and 15.7 of the FSAR discuss the equipment design of the radwaste system at issue, it is incumbent upon intervenors to base their contention upon specific aspects of the system which they think will not work. Intervenors have failed to be specific and the contention cannot be admitted.

16. Liability of New Owners

We adhere to our earlier ruling on CESG Contention 22 (Palmetto 48). In addition, this contention must now be disallowed on the independent ground of the recently-adopted rule barring financial qualifications from operating license proceedings.

17. Documents

The Intervenors ask us to require the Applicants to serve on them complete copies of the Application, Environmental Report, Final Safety Analysis Report and Technical Specifications. We are denying this request because of the expense involved in supplying these voluminous documents to each Intervenor. These documents are available to Intervenors at the Public Document Room in Rock Hill. We understand they are also available in Charlotte at the Applicants' offices. We are exploring the possibility of opening another public document room in Columbia. Such a room would alleviate the practical problem for Palmetto.

C. Access to the Catawba Security Plan

Although we conditionally admitted Palmetto's Contention 23 concerning the Catawba security plan in our Order of March 5, we stated that "we would condition a disclosure order on Palmetto's having obtained the services of a qualified security plan expert." We also indicated that access to the plan would only be granted subject to some form of protective order restricting disclosure of safeguards information. In response to questions subsequently posed to them in our Order of April 13, Palmetto has informed us, among other things, that they do not have and do not intend to obtain a security plan expert in the generally accepted sense of that term. Furthermore, Palmetto has expressed an unwillingness to submit to any form of protective order that will restrict their freedom to disclose safeguards information in any manner they see fit. Palmetto's Response to Board Questions at 3-5.

The Staff and the Applicants have filed pleadings in opposition to Palmetto's submission, arguing that both expert assistance and a protective order are prerequisites to access to a security plan. We agree with the Staff and the Applicants on those points, substantially for the reasons they advance. We also believe that these developments call for the dismissal of Contention 23 because, in our view, access to the Catawba security plan is necessary in order to develop specific contentions in this case. A few additional comments on this subject are appropriate.

Palmetto proffers two former Duke Power Co. security employees at the McGuire facility as expert witnesses. There is no showing that these people are qualified as security experts except as would be derived from their prior employment. The burden is on the sponsor to demonstrate his witnesses' credentials. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-410, 5 NRC 1398, 1405 (1977). An expert in nuclear power plant security should possess extensive training or experience in that or closely related fields. Such a person should be able to assess overall plant security with an appreciation for its interrelated aspects. There is no basis for assuming that a former security employee *ipso facto* has the necessary background. We cannot accept Palmetto's unsupported assertion that "more formal expertise" in this area is only available to the owners of nuclear power plants. As the Applicants point out, there are indications that intervenors in other cases have been able to secure the services of security experts. *See* Applicants' Response at 23, n.17. At the very least, we would have required proof of diligent efforts to secure expert services.

As we read Palmetto's response, they decline to be bound by any restrictions on subsequent disclosure of safeguards information. The Commission's rules (10 CFR 2.744(e)) clearly authorize and may well require imposition of such restrictions. In any case, this Board would consider them necessary here. We note Palmetto's alternative suggestion that they be given a "sanitized" version of the Catawba security plan without any restrictions on disclosure. The concept of a sanitized plan involves withholding from an intervenor sensitive parts of a plan that he does not need to litigate his contentions. But as the Staff correctly points out, the resulting sanitized plan, minus those parts, is still subject to restrictions on disclosure. Given Palmetto's stated aversion to such restrictions, the sanitized plan approach can serve no purpose here.

In sum, an Intervenor must have a qualified expert and must submit to a protective order if he wishes to pursue a security plan contention. Palmetto has failed to meet these preconditions. Accordingly, Palmetto Contention 23 is dismissed because it is impermissibly vague and because Palmetto has not met reasonable contentions that would enable it to develop specific contentions.

Palmetto makes the alternative request that this Board "pursue this security issue pursuant to its general *sua sponte* authority." Palmetto Response at 5-6. In that connection, they also ask the Board for an order enjoining the Applicants from acts of "harassment, intimidation or reprisal" against the former security employees as a result of their cooperation in this matter.

The Board reserves for the present the question whether it will take any further action on the seemingly serious allegations at page 5 of Palmetto's response. As to the request for an injunction, we need not now explore the scope of our authority (if any) in that regard. The Applicants have categorically denied those allegations. Injunctive and similar relief does not issue without a predicate of convincing proof. We presently have no proof of Palmetto's allegations.

D. Revision of Condition on CMEC Contention

By letter dated June 15, 1982, Counsel for the Staff brought to our attention an inaccurate statement made in a condition attached to our admission of CMEC Contentions 1-4 in the March 5 Order (LBP-82-16, 15 NRC 575-76). The inaccuracy arises from the fact that the Staff's review of the methodology for calculating the source term of radioactive emissions at Catawba will be in the Staff Safety Evaluation, not the Staff's environmental impact statement. Accordingly, the last two sentences on p. 575 of Vol. 15, NRC Issuances are amended to read as follows:

> Should these contentions go to hearing, additional information concerning them may be contained in the Staff's safety evaluation report and impact statement. Accordingly, CMEC shall review the Staff's safety evaluation report and draft and final environmental impact statements promptly after they become available and revise these contentions, as appropriate, in light of those documents.

E. Discovery

The Board's Order of May 25, 1982, temporarily suspended discovery on specified contentions pending our rulings on requests for reconsideration, motions for referral, and related matters. That suspension was based upon the Staff's extension of its expected issuance dates for certain documents, particularly the six month extension with respect to the Safety Evaluation Report. The SER in this case is now scheduled for issuance in February 1983. Hearings normally begin about three or four months after the SER issues. However, in light of the information supplied by the Applicants in Mr. Carr's letter of May 10, 1982 to the Board — particularly an initial fuel loading date of October 1984 for Unit 1 — it appears that the hearing in this case could begin somewhat later than the Staff's SER issuance date would normally indicate, if necessary to allow adequate time for discovery, without the risk of this becoming an "impacted" proceeding.

In these circumstances, we solicited the views of the parties on a draft order that would have suspended all mandatory discovery in this case until after the status of the contentions became more clearly fixed by Appeal Board rulings on key issues. The Applicants and CESG (informally by telephone call from Mr. Riley to the Chairman) expressed no objection to that approach. The staff supported suspension except with respect to Palmetto Contentions 8 and 16, if the Board decides to admit them. The Staff properly points out that those contentions would not be affected by the anticipated Appeal Board rulings. The Board agrees with the Staff's reasons for allowing discovery to proceed on those contentions, and notes that the same considerations apply to Palmetto Contention 27. With the foregoing considerations as background the Board orders that:

(1) All mandatory discovery in this proceeding is suspended pending further order of the Board except with respect to Palmetto Contentions 8, 16 and 27. This suspension applies to all pending matters in the discovery process, including, for example, motions to compel, motions for protective order, and the like.

(2) This suspension of discovery is not to jeopardize the right of all parties to an adequate opportunity for discovery in this proceeding.

The Board intends to modify or rescind this suspension order promptly after the Appeal Board rules on the questions we are referring to it, or after the Appeal Board declines referral.

The Board encourages the continuation of informal voluntary discovery among the parties while this suspension of mandatory discovery is in effect.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James L. Kelley, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 8th day of July, 1982.

Cite as 16 NRC 180 (1982) **LBP-82-51A**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon

In the Matter of **Docket No. 50-155-OLA**
(Spent Fuel Pool Amendment)

CONSUMERS POWER COMPANY
(Big Rock Point Plant) **July 8, 1982**

The Licensing Board affirms, over objections of the NRC Staff, a phased schedule for the filing of findings of fact and conclusions of law subsequent to an evidentiary hearing. Under the schedule, all parties are required to make simultaneous filings of findings of fact and conclusions of law on each of the contentions and all parties have simultaneous rights of reply.

RULES OF PRACTICE: SCHEDULING FINDINGS OF FACT AND CONCLUSIONS OF LAW

A Board may require phased findings of fact and conclusions of law subsequent to an evidentiary hearing in order to expedite the decision process by permitting the Board to begin analyzing the record efficiently. Under a phased schedule, early findings may be required prior to the 30 days allowed for applicants under the procedural regulations. The Board may also require simultaneous filing of these phased findings, in order to expedite the proceeding and to encourage staff to develop an independent position.

MEMORANDUM
(Staff Motion to Reconsider Schedule for Findings)

At the conclusion of the evidentiary hearing conducted in early June, the Board adopted a schedule for the filing of findings of fact. Staff has asked us to reconsider the schedule, which alters the ordinary regulatory schedule for filing findings of fact, in which applicant has 30 days after the record is closed, intervenors have 40 days and the staff has 50 days, followed by five days for applicant to reply. 10 CFR §2.754(a).

Since the hearing concluded on June 12 and the record was closed on issues fully considered at the hearing, the schedule we are asked to reconsider permits us to begin writing findings well before the customary 55 days elapse. One reason for the expedition is that staff's traditional 10 days of grace is deleted. The adopted schedule follows:

Contention	**Findings**	**Replies**
Emergency planning pamphlet	6/25/82	7/08/82
EIA	7/16/82	8/05/82
Cask Drop	7/16/82	8/05/82
Administrative Controls (Crane)	7/30/82	8/19/82
Other Emergency Planning Issues	7/30/82	8/19/82
TMI Issues	8/16/82	9/07/82

Staff's principal reason for opposing the schedule is that it calls for simultaneous findings of fact, contrary to a position taken in a portion of the statement of considerations for §2.754(a). 37 *Fed. Reg.* 15127 (July 18, 1972). That statement of considerations supports the decision in the rule to permit staff to consider the position of other parties before finalizing its position.

Although Christa-Maria *et al.* have supported staff's position, we are not convinced of its merit. We accept applicant's view that §2.754 permits the Board to vary its regularly provided procedures. Our reasons for varying the procedure were stated on the record, and include concern for expedition and the desirability of obtaining an independent statement of staff views. Tr. 2605-2608. Furthermore, the schedule for replies provides the staff the opportunity to review other parties' filings and revise its views, if necessary.

We believe that the phased schedule for simultaneous filings will expedite our decision and that it establishes a fair schedule that allows each party an equal opportunity to influence the outcome. *See* Tr. 2605-08. There is no persuasive reason to disturb the adopted schedule, which we laboriously crafted, and to construct a new schedule. Instead, it will be fair and efficient for us to adhere to the course we adopted.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 8th day of July, 1982,

ORDERED

The Nuclear Regulatory Commission Staff's Motion for Reconsideration of Order Concerning Schedule for Filing Findings of Fact and Conclusions of Law, filed on June 28, 1982, is denied.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 183 (1982) LBP-82-52

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H. Frye, III, Chairman
Dr. Martin J. Steindler
Dr. Robert L. Holton

In the Matter of **Docket No. 50-10-OLA**

COMMONWEALTH EDISON COMPANY
(Dresden Nuclear Power Station,
Unit No. 1) **July 12, 1982**

Pursuant to a Memorandum and Order of the Commission directing its establishment (CLI-81-25, 14 NRC 616 (1981)), the Licensing Board rules that one individual and two organizations have standing to intervene in this proceeding concerned with chemical decontamination of Dresden Unit 1 but, because it finds that none of the contentions advanced by Petitioners are acceptable under 10 CFR §2.714 and CLI-81-25, the Board denies the petitions.

RULES OF PRACTICE: STANDING TO INTERVENE

An organization petitioning to intervene as a representative of its members must demonstrate that it has at least one member with personal standing who has authorized the organization to represent his or her interest.

RULES OF PRACTICE: STANDING TO INTERVENE

Purely academic interest in a problem is not an interest encompassed by 10 CFR §2.714. In order to satisfy 10 CFR §2.714, an injury in fact must be alleged.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

In order to be admitted for litigation, a contention must inform the Board and the parties of the matters sought to be litigated. Particularly where substantial technical information is available indicating the bases for the applicant's proposal and the Staff's position, Petitioners' contentions must indicate the specific respects in which they quarrel with that information.

MEMORANDUM AND ORDER

(Ruling on Amended Petition)

This matter concerns a request by Licensee to chemically decontaminate the interior surfaces of Dresden Unit 1's primary coolant system. This request has been pending for some time.

On September 28, 1981, the Commission issued a Memorandum and Order (CLI-81-25, 14 NRC 616) in response to requests for hearing in this matter filed by Citizens for a Better Environment, Prairie Alliance, Illinois Safe Energy Alliance, Kay Drey, Bridget Rorem, and Marilyn Shineflug. This Memorandum and Order directed that an Atomic Safety and Licensing Board be appointed to rule on the requests and laid down certain guidelines pertinent to the requests and any hearing which might result from them.

Pursuant to the Commission's Order, this Board was established. Pursuant to this Board's Order, amended petitions were filed and responses received from Licensee and Staff.

While the Board had this matter under consideration, on March 29, 1982, Licensee informed the Board that, while it definitely plans to go forward with chemical decontamination of Dresden Unit 1, it appeared that it could not do so prior to June 1, 1983, and did not expect to do so before 1984. Consequently we requested Petitioner's comments on the impact of this information on their petition and contentions in general and in particular on those portions of proposed Contention A which address the potential problem of an extended lay-up of the reactor between decontamination and return to service.

Petitioners responded to this request, albeit two weeks late, and at the same time submitted a "Second Amended Petition and Initial Contentions." This Amended Petition is specifically authorized by 10 CFR §2.714(a)(3). Licensee and Staff have responded to both documents on the merits. We treat the Second Amended Petition (hereinafter Petition or Amended Petition) as superceding the Amended Petition and confine our ruling to it as amplified by the Petitioners' response to the Licensee's deferral of decontamination.

Before considering the amended petition, it is important to note that the license amendment sought by Licensee has been issued. In its Memorandum and Order, the Commission stated ". . . if the Director [of Nuclear Reactor Regulation] determines that the proposed licensing modifications present 'no significant hazards consideration,' then the decontamination may be initiated prior to the conclusion of any hearing." (14 NRC at 623). On December 18, 1981, the Director made that determination and issued Amendment No. 35 authorizing the decontamination, along with a Safety Evaluation Report covering the amendment.

Standing

In its September Memorandum and Order, the Commission required each petitioner to separately establish standing to participate. In their Petition, Petitioners have addressed this issue separately for each Petitioner, and have addressed some of the objections of Licensee and Staff on this point.

The organizations petitioning do so as representatives of their members residing near the Dresden Station. Citizens for a Better Environment (CBE) petitions on behalf of two of its members, Kevin Greene and Bridget Rorem, who reside 25 and 15 miles, respectively, from the station. Prairie Alliance (PA) petitions on behalf of one of its members, the same Bridget Rorem. Both members have furnished the necessary authorization to these organizations. The Illinois Safe Energy Alliance, a coalition of 19 affiliate organizations with over 300 members, petitions on behalf of those members residing near the station. However, no such members are identified and no authorizations furnished. Thus the Alliance has not complied with the requirements laid down in *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377 (1979).

Additionally, CBE seeks to intervene on behalf of its members who may be affected by possible decontamination of other reactors in the future, and Kay Drey supports her standing on the ground that she may be adversely affected by decontamination of other nuclear stations. These allegations raise matters outside the scope of this proceeding and consequently cannot furnish a basis for standing. *Cf. Consolidated Edison Company of New York, Inc.* (Indian Point, Units 1, 2 & 3), ALAB-304, 3 NRC 1 (1976). We agree with the Staff that purely academic interests are not encompassed by 10 CFR §2.714(a). These concerns must await a future case affecting a specific interest of these petitioners. They are, of course, also free at any time to raise general concerns under 10 CFR §2.802.

Marilyn Shineflug seeks to support her standing on her status as a citizen of Illinois. She furnishes no information with respect to her residence or other activities in the vicinity of the Dresden station, asserting merely that her own, her family's and her descendants' health, safety and property will be adversely affected by any negative environmental impact resulting from the decontamination. These allegations are insufficient to support standing. As noted in the discussion of ISEA's petition, acceptance of such allegations in support of standing would run counter to the rationale of *Allens Creek, supra*.

Bridget Rorem, however, has clearly satisfied 10 CFR §2.714(a) by alleging that she resides within 15 miles of the Dresden station and that her own, her family's and her descendants' health, safety, and property will be adversely affected by any negative environmental impact of the decontamination. Her standing, as well as that of Kevin Greene, support the representational standing of CBE and PA.

Contentions

Proposed Contention A asserts:

A. There has not been an adequate evaluation of the impact of the proposed decontamination if Dresden 1 is to be restarted in 1986 or later.
   1. It has not been demonstrated that the extended period between decontamination and startup will not increase the likelihood of increased corrosion of bolts and valves in the core support system or of metal in the vessel clad or any creviced areas or pockets.
   2. There has been no demonstration that the final inspection criteria of the materials in the reactor coolant pressure boundary will be adequate to insure the safe resumption of operation.
   3. It has not been demonstrated that the extended lay-up after decontamination will not exacerbate any stresses or cracks already existing and/or induced by the decontamination.
   4. There has been no demonstration that the decontamination will neither induce nor increase the likelihood of stresses or cracks developing in materials embrittled by more than 15 years of exposure to radiation; evaluations of potential embrittlement problems has [sic] been ordered by the NRC for other reactors.
   5. There has been no demonstration that any alternatives to decontamination are not preferable to the proposed method in light of the decrease in the remaining years of operation if the unit is not restarted until 1986 (the operating permit expires in 1996).
   6. There has been no demonstration that the cost of other actions and modifications necessary for restarting the unit will be sufficiently minimal that the total cost for restarting the reactor would be less than the "break even renovation cost" of $105 million (Final EIS p. 8-6).
   7. There has been no demonstration that the hazards analysis for the decontamination and post-decontamination review will be adequate for resumption of operation in light of TMI-2 and the current state of knowledge.

In their response to Licensee's deferral of decontamination, Petitioners do little to elaborate on this Contention, which remains unchanged from their original version despite the subsequent issuance of the SER which devotes considerable discussion to the problem posed by an extended lay-up between decontamination and restart. The response basically reiterates Petitioner's concern with regard to the lay-up period and asserts a concern that too long a period prior to decontamination could also be detrimental.

Licensee opposes Contentions A.1, A.2, A.3, A.6, and A.7 on the ground that they raise matters relevant only to operation. Licensee correctly points out that CLI-81-25 limited this proceeding to matters arising from decontamination.

Additionally, Licensee objects on the following grounds:

A.1 — No basis is given for the assertion that there will be an extended period between decontamination and restart.

A.2 — No basis or specificity is furnished for the assertion that the final inspection will not be adequate.

A.3 and A.4 — No basis is given to support the assertion that stresses or cracks will be induced or exacerbated by an extended lay-up after decontamination, or that decontamination itself will induce or exacerbate stresses or cracks, or that stresses or cracks exist. Licensee also objects to the fact that Contention A.3 would require proof of a negative.

A.5 — No authority exists to consider alternatives absent a determination under NEPA that decontamination will have significant effect on the environment or involves unresolved conflicts concerning uses of available resources. Further, no contention calls for such NEPA determinations.

A.6 — Economic costs are irrelevant absent a showing that an environmentally preferable alternative exists.

A.7 — No basis or specificity is given.

Staff basically agrees with the Licensee's specific objections to Contentions A.2 and A.7. Staff views Contentions A.5 and A.6 as attempts to litigate matters considered in the FES (NUREG-0686, October 1980), correctly noting that the Commission in CLI-81-25 excluded these matters from this proceeding. As to Contention A.6, Staff agrees with Licensee that it also improperly seeks to litigate matters related to restart as well as economic matters without the required environmental showing.

Staff differs with Licensee with respect to Contentions A.1, A.3, and A.4. These the Staff views as presenting acceptable subjects for hearing.

These Contentions do identify problem areas which the Staff has pointed out in its December 18 SER. Contentions A.1, A.3, and A.4 raise in general terms concerns about which a good deal of information was available to Petitioners. For instance, in a letter to NRR dated May 5, 1980, Brookhaven National Laboratory (BNL) commented on a Licensee submittal of March, 1980, and raised concerns regarding an extended lay-up period. BNL stated that should an acid residue of the solvent used in decontamination remain in crevices in the presence of such inorganic anions as sulfates, sulfites or chlorides, a possibility would exist for continued crevice corrosion. BNL pointed to the difficulty of removing the residual acid from tight crevices by rinsing. BNL also expressed concern that activated crevices in stressed piping could continue to propagate during a long shutdown. BNL recommended a thorough rinsing procedure, coupled with either heating the reactor vessel and piping, or, if heating were not feasible, a neutralizing treatment.

In a letter of September 3, 1980, BNL commented further on the cleaning and rinsing procedure and indicated that its concerns had been substantially reduced. Both these letters are available in the local Public Document Room for the facility.

Following submission of these Contentions, the SER for the decontamination was issued. It contains an extensive discussion of the problem posed by a lay-up period, and relies on the BNL letters for the conclusion that the proposed rinsing procedure will prevent any corrosion or crack propagation which might otherwise occur following decontamination. Approximately five months later Petitioners filed their Amended Petitions which restated the Contentions without substantive change.

In these circumstances, we believe more is required to state acceptable Contentions. These Contentions do no more than point to the existence of a problem which Licensee and Staff have recognized and have resolved to their own satisfaction. Petitioners assert that there has been an inadequate evaluation of the decontamination, assuming an extended lay-up, because that lay-up will result in increased corrosion and exacerbation of cracks. They do not address the proposed solution to these identified problems. They do not give notice to the Board or the parties of the respects in which Petitioners regard the proposed solution as inadequate. They do not even say that Petitioners regard the proposed solution inadequate. As they stand, the Contentions simply do not place any facts in issue. They are more conclusions than they are contentions. Because they do not give notice of facts which Petitioners desire to litigate, they fail to be specific enough to satisfy the requirements of 10 CFR §2.714.

The remaining portions of Contention A are denied for the following reasons.

A.2 — The term "final inspection criteria" lacks the necessary specificity to advise the Licensee and Staff of the matter sought to be litigated. Additionally, this Contention appears to be aimed at pre-operational, rather than post-decontamination, inspection. As such, it is outside the scope of this proceeding.

A.5 — The Board agrees with Licensee that, absent an appropriate contention and determination by this Board under NEPA, this Contention need not be considered.

A.6 — The Board agrees with the Staff's conclusion that this Contention need not be litigated because it relates to matters covered in the FES and is related to restart rather than decontamination.

A.7 — The Board agrees with the Staff's conclusion that this Contention need not be litigated. The Contention does not indicate what Petitioners seek to litigate and hence is too vague.

Contention B states:

> B. There has not been an adequate evaluation of the impact of the proposed decontamination if Dresden Unit 1 will never be restarted.
>
> 1. It has not been demonstrated that the proposed method of decontamination is the preferable method or if it is necessary based on environmental, health and cost considerations if the reactor is not restarted.
> 2. It has not been demonstrated that decontamination is unrelated to decommissioning of the reactor.
> 3. If the decontamination is not related to startup or decommissioning then the applicant has not adequately demonstrated a need for the decontamination and for imposing any potential environmental and health impacts of the decontamination on the public.

Licensee objects to Contention B.1 for the same reasons given in opposition to A.5, *i.e.*, that it requests a consideration of alternatives without a showing under NEPA that such is necessary. Licensee objects to Contention B.2 because it does not state a contention and, in any event, is outside the scope of the proceeding as defined by the Commission. Licensee objects to Contention B.3 because it calls for a justification for the project under NEPA without a showing that NEPA requires this consideration.

Staff objects to Contention B *in toto* as calling for litigation of matters contained in the Final Environmental Statement, noting correctly that the Commission expressly excluded these matters from the proceeding in CLI-81-25.

In their Amended Petition, Petitioners have added a reference in this Contention to an article entitled "The Environmental Biogeochemistry of Chelating Agents and Recommendations for the Disposal of Chelated Radioactive Wastes," 2 Nuclear and Chemical Waste Management 183-196 (1981). The article is the work of Jeffrey L. Means and Carl A. Alexander of Battelle Columbus Laboratories. Petitioners do not indicate why the reference is added or what portions of the article they deem relevant to this Contention. The abstract of the article indicates that, if it is relevant, it is relevant to Contention F, not Contention B.

In these circumstances, the reference does nothing to aid Contention B. While the inclusion of such references in Contentions has the potential to benefit the process by furnishing the details of Petitioners' position, mere reference to an article which on its face appears irrelevant does not accomplish this. At the least, the reference should specify the portions of the material relied on; preferably it should include an explanation of Petitioners' position on the relevance of the referenced material. (*See Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1 and 2), LBP-76-10, 3 NRC 209 at 216 (1976).)

The Board believes that before any part of this Contention could be accepted, it would be necessary to find that, under NEPA, the decontamination constituted a major Federal action significantly affecting the human environment. Contention B presupposes the need for a cost-benefit balance and a consideration of alternatives under NEPA. These requirements do not come into play absent finding referred to above. Consequently the Board agrees with Licensee that a prerequisite to this Contention is the successful prosecution of a contention asserting the applicability of NEPA.

Moreover, in light of the Commission's determination not to permit challenges to the FES in this proceeding, coupled with their recognition that ". . . the staff has concluded that the decontamination project will have no significant impact on the human environment . . ." (CLI-81-25, 14 NRC 625), it is difficult to conceive of a situation in which such a contention could be admitted in this proceeding.

Additionally, the Board, like Licensee, is perplexed by the impact of Contention B.2. It appears merely to be a statement, rather than a contention. To the extent that it raises the possibility that Licensee will not restart this reactor, it falls under NEPA and is also governed by the above reasoning.

Contention C states:

> C. There was no adequate demonstration that the choice of decontamination procedure both specifically and as a general alternative was not simply a rationalization as was suggested by the Advisory Committee on Reactor Safeguards on October 8, 1980.

Licensee objects on the grounds that, first, this Contention again raises NEPA considerations in the absence of a finding that NEPA is applicable; second, the Contention is overly vague; and third, the Contention impermissibly challenges the Staff's FES. Staff finds this Contention overly vague, and perhaps constituting, under one possible interpretation, an impermissible challenge to the FES.

The Board agrees that the Contention is too vague to be admitted. To the extent that it seeks a consideration of alternatives, it must be denied for the same reasons as Contention B.

Contention D states:

> D. The proposed decontamination is a novel procedure for a commercial reactor and thus no assurance of safety has been demonstrated.

Licensee and Staff find this Contention overly vague and lacking basis. The Board agrees. The Contention wholly fails to indicate what is sought to be litigated.

Contention E states:

> E. Neither the Board nor the public can properly evaluate the impact of the decontamination without more detailed information on the nature of the solvent, NS-1.

Licensee and Staff find this Contention overly vague. While the Board agrees that this Contention is vague, it must be borne in mind that the composition of the solvent, NS-1, is proprietary. Consequently, Petitioners obviously have been hampered in their ability to state an acceptable Contention. Nevertheless, information with regard to the use and properties of the solvent is detailed in the Staff's SER, and has been available in the local public document room in correspondence dating back to 1974. Consequently the Board is of the opinion that Petitioners should have furnished more information with regard to the deficiencies they perceive in the information available and why those deficiencies inhibit a proper evaluation of the decontamination. This contention is denied.

Contention F states:

> F. The applicant and NRC staff have not properly evaluated the potential impact of the waste generated by the decontamination.
>
> 1. There has been no adequate evaluation of the potential for migration of chelated radionuclides, even in a dry environment, from waste temporarily trapped in a polymer matrix.
> 2. The applicant has not demonstrated that there will not be more migration from the chelated waste than other radioactive waste disposed of in the Beatty or Hanford sites.
> 3. The applicant has not properly evaluated the potential for migration of chelated radionuclides following the eventual degradation of the polymer matrix which will occur after burial.
> 4. The applicant has not properly evaluated the environmental advantages to be derived from deactivation of the chelate complex in case of transportation accidents, leaks on site or leakage from the drums either before or after burial.
> 5. There was inadequate assurance that the disposal sites will be able to accept all the waste from this and/or other decontaminations employing this procedure and *still* meet the disposal criteria described in the EIS.

Licensee asserts that because none of the individual petitioners or the members of the organizations petitioning reside close to the proposed disposal sites, they have not demonstrated that they will suffer injury from the disposal of the wastes resulting from the decontamination. Licensee believes that consequently their participation should not extend to the waste disposal issue, citing 10 CFR §2.714(f), *Sierra Club v. Morton*, 405 U.S. 727 (1972), and *Allied General Nuclear Services* (Barnwell Fuel Receiving and Storage Station), ALAB-328, 5 NRC 420 (1976). Staff and Petitioners do not address this proposition.

The Board has found that Bridget Rorem and Kevin Greene have standing to participate in this proceeding based upon their residence close to the reactor, and that based upon the membership of either one or both of these persons, both CBE and Prairie Alliance have standing to participate in this proceeding as representatives of their members. None of these parties, however, has made any showing as to how their respective interests would be affected by the consequences of disposal of the wastes generated by the decontamination.

This Board has found no NRC precedent specifically addressing the question of whether a petitioner who has standing in a proceeding based on residence close to a reactor also has the necessary standing to raise questions relative to the consequences to distant sites of the storage of waste produced during the decontamination of the reactor.

We note that the NRC has allowed consideration of issues relating to uranium mines located considerable distances from nuclear plants applying for licenses (*see, e.g., Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-640, 13 NRC 487 (1981); *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-79-6, 9 NRC 191, 297-98 (1979). It does not appear, however, that those cases considered whether the intervenors raising those issues had shown injury from that aspect of operation.

While we entertain some question whether any of the Petitioners have established standing to litigate issues related to the disposal of decontamination wastes at distant sites, this point was never addressed by Staff and Petitioners (although both had the opportunity to do so) and was only minimally briefed by Licensee in its response to the Petitioners' Amended Petition. Consequently, we do not decide this point.

Another difficulty presented by Contention F is whether it seeks to litigate the Staff's FES. In CLI-81-25, the Commission stated ". . . that the public interest does not require a hearing on the Final Environmental Statement." (14 NRC at 625.) Neither Staff nor Licensee assert this objection. However, we believe a close question exists with regard to the scope of the Commission's ruling (does it preclude litigation of matters covered in the FES only, or also of attempts to assert that matters should have been covered and were not), and the specifics of this Contention.

With respect to the latter problem, we are confronted with an assertion that "[t]he applicant and NRC Staff have not properly evaluated the potential impact of the waste generated by the decontamination." In five following paragraphs, it is asserted that there has been inadequate evaluation of the potential for migration of chelated radionuclides, no demonstration that these wastes will not migrate more than other wastes, no proper evaluation of potential migration following degradation of the polymer matrix, inadequate evaluation of the advantages of deactivation of the chelate complex, and inadequate assurance that the disposal sites can handle the wastes and meet the disposal criteria of the FES.

None of this tells the parties or the Board in what specific ways the evaluation has been improper. We are left to speculate with what specific aspects of the evaluation Petitioners quarrel. In what respects has the evaluation of the potential for migration of chelated radionuclides been inadequate? Why should the Licensee demonstrate that its wastes will not migrate more than other wastes? What's wrong with the Licensee's evaluation of the potential for migration of chelated radionuclides following degradation of the polymer matrix, and its evaluation of the advantages of deactivation of the chelate complex? Why is there inadequate assurance that the disposal sites can accept the wastes and meet the disposal criteria, and what specific criteria in the FES are involved? The Contention poses these questions, it does not answer them. We are thus severely handicapped in judging not only whether the Contention improperly places the FES in issue, but, leaving the FES aside, precisely what is sought to be litigated.

Petitioners have an obligation to answer such questions if their contentions are to be accepted for litigation. Section 2.714 of the Commission's regulations requires no less. Before initiating costly and time-consuming litigation, the Commission is entitled to know what is to be litigated.

The amount of information available to Petitioners and the length of time it has been available make it easy for the Petitioners to have supplied the necessary detail. CLI-81-25 was published September 28, 1981. The FES has been available since October, 1980, and the SER since December, 1981. Additionally, the data evaluated in the SER predates 1975 and has been available in the local public document room. Nonetheless, neither the amended petition of November, 1981, nor the second amended petition of May, 1982, make reference to this material in order to supply the necessary detail. In the second amended petition, reference in Contention F is made to the Petitioners' response to the Licensee's deferral of decontamination. No elaboration is given, and we suspect that in fact Petitioners intended to refer to the article on chelated wastes discussed above. If so, as we indicated, more was required than the bare reference itself.

In these circumstances we must conclude that Petitioners have failed to state this Contention with sufficient specificity to comply with §2.714.

Contention G asserts:

> G. The FES is deficient in that it does not adequately evaluate the potential impacts from the proposed decontamination.

Licensee and Staff believe that this Contention seeks to litigate matters discussed in the FES and correctly point out that the Commission precluded this. The Board agrees. The Contention is denied.

Two points raised in Petitioners' response to the Licensee's deferral of decontamination remain to be addressed. In their paragraph numbered "1." on page 1, Petitioners call into question Licensee's financial qualifications to conduct the decontamination, as well as its "plans or predictions" for future nuclear generating capacity. While we are unsure whether this is meant to be a contention, we note that if so, it improperly seeks to introduce financial qualification and "need for power" issues into the proceeding. As the Staff points out, the Commission's recently promulgated rule, "Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Hearings for Nuclear Power Plants," 47 *Fed. Reg.* 13750, March 31, 1982, removes the issue of financial qualifications from construction permit and operating license proceedings for power reactors. While license amendment proceedings are not specifically included in the rule (the issue typically was not raised in these proceedings), it would be anomalous to take the issue up in this proceeding. The Commission's rationale for eliminating the requirement in construction permit and operating license proceedings is no less applicable to license amendment proceedings.

In *Consumers Power Company* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312 (1981), the Appeal Board held that it was not necessary to consider the continued plant operation which might be permitted by the grant of a license amendment. We believe this rationale is applicable to the "need for power" issue to the extent Petitioners seek to raise it here.

The second point is Petitioners' request that the Board seek Commission clarification as to the admissibility of questions relating to the return to service of Dresden Unit 1. This is set forth in the paragraph numbered '4' on page 2 of Petitioners' response.

The Commission's intent to exclude restart matters from this proceeding is clearly set forth in CLI-81-25, and Petitioners have not made a showing sufficient to justify the certification of this question to the Commission. Consequently the request is denied.

Because we have found that none of the Contentions advanced by the Petitioners meet the standards of CLI-81-25 and §2.714, we find it unnecessary to address the question of discretionary intervention. We read the Commission's decision on this matter, *Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610 (1976), as permitting Boards to admit, on a discretionary basis, petitioners who do not meet the Commission's requirements for standing. We do not believe the Commission intended that a petitioner without a valid contention should be entitled to discretionary intervention, nor do we believe that a petitioner could qualify for discretionary intervention without a contention worthy of exploration in an adjudication.

ORDER

In consideration of the foregoing, it is this 12th day of July, 1982, ORDERED

1. Petitioner Bridget Rorem has standing to intervene based on her residence;

2. Petitioner Citizens for a Better Environment has standing to intervene as a representative of its members, Kevin Greene and Bridget Rorem;

3. Petitioner Prairie Alliance has standing to intervene as a representative of its member, Bridget Rorem;

4. Petitioners Kay Drey, Marilyn Shineflug, and Illinois Safe Energy Alliance

lack standing to intervene; and

5. None of the Contentions advanced by Petitioners satisfy the requirements of CLI-81-25 and 10 CFR §2.714.

It is further ORDERED that the Petition is hereby DENIED.

Pursuant to 10 CFR §2.714a, this Order may be appealed to the Atomic Safety and Licensing Appeal Board by the filing of a notice of appeal and accompanying brief within ten days after service of this Order. Any other party may file a brief in support of or opposition to the appeal within ten days after service of the appeal.

Judges Steindler and Holton concur but were unavailable to sign this Memorandum and Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

John H. Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland,
July 12, 1982.

Cite as 16 NRC 196 (1982) **LBP-82-53**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*
(Perry Nuclear Power Plant,
Units 1 & 2) **July 12, 1982**

The Board admits late-filed contentions on psychological stress, the degradation of electrical wiring from radiation-induced embrittlement of electrical insulation, and the impropriety of considering local economic effects as benefits for purposes of the Draft Environmental Statement, but requires intervenors to further particularize two of the contentions prior to hearing.

The Board refuses to admit a late-filed contention that the plant's closed-cycle cooling system should be replaced by a radial well system, such as has been employed at Grand Gulf Nuclear Station, in order to reduce the number of fish, fish eggs and larvae destroyed through impingement and entrainment. The Board also refuses to admit a contention that the environmental analysis must consider the possible use of nuclear fuel for nuclear weapons, should the government subsequently decide to permit the use of laser isotope separation techniques to accomplish this purpose.

In addition, the Board rules that the decision in *Natural Resources Defense Council v. NRC*, Civil Action No. 74-1586 (April 27, 1982), which has not been accompanied by a mandate, does not provide grounds for reconsidering an earlier ruling excluding a contention on the safe disposal and storage of radioactive materials.

RULES OF PRACTICE: ADMISSIBILITY OF LATE-FILED CONTENTIONS

Intervenors may be excused for lateness in filing if they keep current with reputable sources of information such as *Science*, *Science News*, and the *Bulletin of the Atomic Scientist*. They need not keep up with all NRC literature and all technical literature concerning nuclear reactors.

CONTENTIONS: PSYCHOLOGICAL STRESS

The Commission is required to consider psychological stress in its environmental analysis providing that there is proof that a nuclear plant will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

RULES OF PRACTICE: VALIDITY OF COMMISSION RULE

A court decision purporting to strike down a portion of the Commission's rules on the consideration of waste disposal issues in NEPA analyses does not invalidate those rules until the court issues its mandate. Prior to the issuance of a mandate, the rule is valid and a contention contradicting the rule cannot be admitted.

CONTENTIONS: FUTURE FEDERAL ACTIONS NOT COGNIZABLE UNDER NEPA

A contention that fuel stored in a spent fuel pool might subsequently be used to manufacture nuclear weapons is not cognizable under NEPA because weapons manufacture is not part of the proposed action and would require either federal legislation or further federal administrative action.

CONTENTIONS: PENDING COMMISSION RULE

When the Commission has decided to implement a rule on the environmental qualification of electrical equipment but has not yet decided when to make the rule effective, it is appropriate to admit a contention on the subject. Provision may be made for applicant or staff to stay discovery on the contention if they wish.

TECHNICAL ISSUES DISCUSSED

Embrittlement of electrical insulation, environmental qualification of electric wiring, radiation, effects on polymers, polymer degradation due to radiation, psychological stress, legal standard for NEPA consideration, impingement of fish, minimum standard for NEPA consideration, entrainment of fish, minimum standard for NEPA consideration.

MEMORANDUM AND ORDER

(Concerning Motions to Admit Late Contentions)

Ohio Citizens for Responsible Energy (OCRE) and Sunflower Alliance, Inc., *et al.* (Sunflower) have requested leave to file contentions as related to: (A) Substratum Placement of Water Intake Structure (OCRE), (B) Use of Commercial Spent Fuel for Nuclear Weapons (OCRE), (C) Polymer Degradation from Radiation Exposure (OCRE), (D) Psychological Stress (Sunflower), and (E) Improper Consideration in the Draft Environmental Statement of Local Economic Benefits (Sunflower). In addition, OCRE has resubmitted for admission the following contention: (F) Safe Disposal Storage of Radioactive Materials (OCRE). Appendix A to this opinion lists the abbreviations we will use for the relevant filings, including the replies intervenors filed pursuant to Board order.

We have decided to admit contentions (C), (D) and (E) and to deny admission of the other contentions. Each of the contentions that was excluded was found to lack a proper basis, either for factual or legal reasons. 10 CFR §2.714(b). Having determined that a basis was lacking, we did not consider whether or not there was good cause for late filing of these contentions. 10 CFR §2.714(b) and 2.714(a)(1).

I. SUBSTRATUM PLACEMENT OF WATER INTAKE STRUCTURE

OCRE contends that the water intake structure that is part of the closed-cycle cooling system proposed by Cleveland Electric Illuminating Company (applicant) will kill fish, fish eggs and larvae through impingement or entrainment. OCRE does not consider these losses to be negligible, although it concedes that the losses would be several orders of magnitude less than losses caused by some other Lake Erie power plants. OCRE Reply at 2. *See* NUREG-0884 (Draft Environmental Statement for Perry Nuclear Power Plant, March 1982) §5.5.2.1 at 5-9 to 5-12. OCRE then suggests that applicant could reduce these losses by employing a radial well system of water intake, similar to a system used in the Grand Gulf Nuclear Station.

Staff opposed admission of this contention because OCRE has not provided a basis for the assertion that its proposed intake structure would significantly improve the environmental impact of the present intake design structure. Staff Ans. (1) at 3-4. In response, OCRE argues that the proposed structure would reduce losses from 1 x 10^6 to zero, which is significant. OCRE Reply at 2.

NUREG-0884, at 5-10, concluded that losses from entrainment at Perry would be similar to the 5,500 per year losses at Davis-Besse Nuclear Power Station during 1979 and 1980. It also found that the species affected "will be rough and forage fish that are numerous in the central basin of the lake." *Id.* at 5-12 to 5-13.

Since OCRE has not provided any reason for disbelieving these findings of the Draft Environmental Statement, we do not consider that it has provided a basis for the belief that the radial well intake structure would substantially improve the overall environmental impact of Perry, even if we accept the assertion that such wells would not kill any fish. Consequently, this contention shall not be admitted for lack of a sufficient basis. (We need not address applicant's argument that the radial well cooling system is not suited to Lake Erie, where its installation would be highly impractical.)

II. USE OF COMMERCIAL FUEL FOR NUCLEAR WEAPONS

OCRE suspects, based on recent actions of the President, recently announced advancements in laser isotope separation technology, statements by the Secretary of the Department of Energy and an excerpt from a Cleveland Electric Illuminating Company publication, that this nation may one day use spent fuel from the Perry plant to build nuclear weapons. As a consequence, OCRE asks that this potential use of spent fuel, and the attendant "horrific consequences of nuclear war", be considered in the Environmental Impact Statement for Perry. OCRE Motion at 3-4; OCRE Reply at 7.

Staff and applicant answer, in part, that the proposed federal action to license this power plant does not include a proposal for the use of nuclear waste for nuclear weapons and that the National Environmental Policy Act of 1969 (NEPA), 42 USC §4332, does not require an evaluation of such a use of waste. Staff Ans. (1) at 13, citing *Kleppe* v. *Sierra Club*, 427 U.S. 390, 403 *et seq.* (June 28, 1976); Applicant Ans. (1) at 14, citing *Kleppe* and other cases.

OCRE, whose legal competence is evident to both us and the Appeal Board (ALAB-675, 15 NRC 1107, n.1), has no answer to this particular legal argument. Instead, it cites two cases for an entirely correct but irrelevant proposition, that if it cannot gain admission for its contention now it will be far harder for it to reopen the record later. (*Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 338 (1978); *Public Service Company of Oklahoma* (Black Fox, Units 1 and 2), ALAB-573, 10 NRC 775, 804 (1979)).

There is substantial sense supporting the legal principle that an environmental impact statement may be limited to the effects of the particular federal action that is being proposed. NEPA is a statute. It does not require that legislative action, authorized by the Constitution, be accompanied by environmental statements. If federal actions had to be considered in light of all possible (or likely) legislation which they might facilitate, that process of prognostication likely would hamstring federal actions of many kinds. Furthermore, the benefit from such a process would be slight since citizens already have an opportunity to oppose legislation through the elective process and their right to communicate with and petition their elected representatives.

Even if spent fuel could be diverted for use in weapons through administrative action, it would not be appropriate to speculate about that possibility in this proceeding. When that action is considered, it may be covered by NEPA or may be exempt. It is the action of taking fuel for weapons that is of primary concern to OCRE, and it may challenge that action when it is being considered. It is not appropriate for us to consider an advance challenge to that speculative future action.

Consequently, this contention shall not be admitted because it is not cognizable under NEPA.

III. POLYMER DEGRADATION

OCRE contends that radiation-induced embrittlement of polymers caused by long-term, low-dose exposures, particularly to electrical insulation, may compromise plant safety. OCRE therefore contends that this insulation should be tested under more realistic conditions than the currently prevailing high-dose, short-duration tests. As a basis, OCRE relies on a Sandia Laboratories study which indicates that low-rate, long-duration exposures may indeed cause greater degradation of polymers than does a high-rate, short-duration exposure. *Mechanism of Synergism and Dose Rate Effects*, NUREG CR/2156, June 1981; and *Occurrence and Implications of Radiation Dose-Rate Effects for Material Aging Studies*, NUREG CR/2157, June 1981.

Staff concedes that the basis for this contention is stated with sufficient particularity (Staff Ans. (1) at 15), and we agree. The discussion of this contention therefore shifts to whether OCRE has shown good cause for late filing.

OCRE learned of this problem from *Science News*, March 27, 1982, at 215. OCRE Motion at 6. That is a publication which provides comparatively current information. Consequently, that publication is different from a general news publication which picks up an issue years after it has achieved widespread notoriety. *Compare Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-82-11, 15 NRC 348, 351-52 (1982); Staff Ans. (1) at 16, footnote 44. We therefore agree with OCRE that it would be unfair to charge it with current knowledge of all NRC publications and that it acts with reasonable diligence when it keeps abreast of journals such as *Science News*, *Science* and the *Bulletin of the Atomic Scientists*, each of which OCRE has cited to us at one time or another in this proceeding. Consequently, we find that OCRE has demonstrated good cause for late filing, the first criterion of 10 CFR §2.714.

The second criterion for late filing favors the admission of this contention. Although there is a relevant interim final rule in effect and a final rule about to be promulgated (more about this below), it appears likely that the Commission will require compliance with the principle OCRE seeks to apply. Furthermore, the applicant has not claimed that it is in compliance with the new rule, so this licensing proceeding is an entirely proper forum for determining compliance.

OCRE also passes the third criterion with flying colors. It has consistently shown the ability to analyze and comprehend technical materials, and we are confident that it may reasonably be expected to participate in the development of a sound record. In its filings on this contention, in particular, its analyses have been sound, and its arguments concerning policy implications have been well reasoned.

The fourth criterion also is met, as OCRE's interest on this issue is not represented by another party. The fifth criterion, while being adverse, is not overly important. We are still at such an early stage of this proceeding that applicant recently has resisted the Board's suggestion that it begin to negotiate target dates for completion of discovery.

On balance, the criteria for late filing also are met. Consequently, both the basis requirement and the late-filing requirement have been met and this contention ordinarily would be admitted. However, effective June 30, 1982, the Commission amended its regulations to suspend completion schedules for environmental qualification of safety-related equipment in operating nulear power plants. 47 *Fed. Reg.* 28363 (June 30, 1982). The Commission indicated that licensees (and, by implication, applicants) should continue efforts to meet the requirements, but that it was suspending the deadline for compliance. *Id.* at 3. The Commission's rationale relates primarily to operating plants, finding that there would be no undue risk to the public health and safety from continued operation pending completion of the equipment qualification program. *Id.* Its statement does not, however, clarify the applicability of the deadline suspension to pending operating license proceedings, such as this one.

Under the circumstances, it appears highly likely that applicants will be required to show compliance with the electrical qualification rule prior to a license being issued. Hence, it seems better to admit the contention. However, the remaining uncertainty makes it likely that we would grant applicant's or staff's motion to suspend this contention from discovery pending issuance of a final rule. (We urge applicant and staff to consider whether such a motion might be adverse to its interests because it might engender delay.) Should such a motion be filed, discovery shall be automatically stayed with respect to this contention, which we admit to this proceeding. The contention, as admitted, is:

> *Issue #9:* Applicant has not demonstrated that the exposure of polymers to radiation during the prolonged operating history of Perry would not cause unsafe conditions to occur.

Because of the potential breadth of this contention, we will require OCRE (which shall act as lead intervenor on this contention) to give increased particularity to this contention, by providing greater specificity as to the basis for believing that particular wires or other locations are potentially dangerous, prior to the time for an evidentiary hearing. The schedule of target dates for this case should include a date for particularizing this contention.

We note that applicant argues that the experience of other operating plants demonstrates that there is no imminent danger of degradation of polymers in its plant. However, applicant has not submitted evidence of the current condition of the polymers in analogous plants or established that the location of polymers in its plants is sufficiently analogous to the location at one or more existing plants to provide the requisite safety assurance. Hence, the generally cited experience of other plants does not provide a basis for rejecting this contention.

IV. PSYCHOLOGICAL STRESS

On April 2, 1982, the United States Court of Appeals issued its decision in *People Against Nuclear Energy* v. *United States Nuclear Regulatory Commission*, No. 81-1131, 678 F.2d 222 (D.C. Cir. 1982) (*PANE*). Sunflower has filed its contention in reliance on that decision.

Applicant's substantive opposition to this contention is that it lacks basis for the belief of "the existence or magnitude of psychological stress for the particular reactor at issue." Applicant Ans. (2) at 3. In response, Sunflower conducted a mail poll of its members. Sunflower Reply (unnumbered attachment). (Sunflower could assist the Board, in the future, by numbering all pages of its filings.) Although many of the excerpts from the member responses do not fit the test of psychological impact prescribed by *PANE*, some of the responses provide a basis for inquiring further and therefore provide a basis for admission of the contention. As with Issue #9, however, further particularity for this contention needs to be provided before the evidentiary hearing so that applicant may be more fully informed of the precise nature of the psychological harm that is being averred.

Staff does not argue that this contention lacks basis or that *PANE* is insufficient grounds for late filing. Instead, it urged us (on May 25, 1982) to await Commission guidance before admitting this contention. At this time, however, we find it difficult to anticipate receiving guidance in the near future; hence, we feel constrained to follow the Commission's previous guidance and to act promptly on this matter. ("The licensing boards should issue timely rulings on all matters."

Statement of Policy on Conduct of Licensing Proceedings 46 *Fed. Reg.* 28533 (May 27, 1981) (CLI-81-8, 13 NRC 452)).

We find the following passages of PANE to be controlling:

> We conclude that, *in* the context of NEPA, health encompasses psychological health. To implement a national policy based on "the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man," 42 U.S.C. §4331 (a)(1976), Congress required each federal agency to utilize a "systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts." *Id.* §4332(2)(A); *see* 40 CFR §§1502.6, 1507.2 (1981); *cf. Chelsea Neighborhood Ass'ns v. U.S. Postal Service*, 516 F.2d 378, 388 (2d Cir. 1975) (social as well as physical sciences relevant under NEPA; agency must consider dangers of emotional and physical isolation of high-rise apartment building, which might as a result become a "human jungle").
>
> * * *
>
> NEPA, moreover, does not authorize federal agencies to deal with intangible factors by ignoring them. It expressly instructs all federal agencies to identify and develop methods and procedures "which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations." 42 U.S.C. §4332(2)(B) (1976).

Id. at 13, 14.

PANE teaches, however, that not every psychologically adverse reaction is cognizable:

> We conlude that PANE's allegation — in the wake of a unique and traumatic nuclear accident — that renewed operation of TMI-1 *may cause medically recognized impairment of the psychological health of neighboring residents* is cognizable under NEPA.
>
> * * *
>
> NEPA does not encompass mere dissatisfactions arising from social opinions, economic concerns, or political disagreements with agency policies. It does apply to *post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe.*

[Emphasis added. Footnote deleted.] *Id.* at 16-17.

Obviously there has not been a catastrophe at Perry. However, we interpret *PANE* to require that Perry's environmental impact statement consider whether Perry's operation will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health. *PANE* holds that such health effects, if present, must be considered under NEPA. The results of Sunflower's survey of its members give us reason to inquire further before we decide whether the operation of Perry will cause such effects. Consequently, Sunflower has adequately specified the basis for its contention. (If the Commission decides otherwise, we will modify our decision accordingly.)

Staff concludes that, in light of the *PANE* decision, Sunflower's contention should be considered timely. That decision changed commonly held beliefs about the acceptability of psychological stress contentions; and a filing delay of three months from issuance of the initial decree (explained in an opinion only *after* Sunflower's filing) is not an undue delay. Hence, on balance, we find that the factors governing admission of a late contention are satisfied.

The issue, as admitted, is:

> *Issue #10:* The Draft Environmental Impact Statement has not adequately considered whether Perry's operation will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

Sunflower shall be lead intervenor for this contention.

V. LOCAL ECONOMIC EFFECTS IN THE COST-BENEFIT ANALYSIS

Sunflower points out that the Draft Environmental Analysis, at p. 6-2, has, improperly, considered increased employment and tax revenues to be benefits for purposes of the cost-benefit analysis. It cites *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 479 (1978).

Applicant answers that benefits accruing from local taxes must be considered, together with offsetting costs which Sunflower might have suggested, in order to have a properly balanced EIS. Applicant Ans. (2) at 12-14. However, the citations in applicant's brief appear to stand for the proposition that local taxes may be used to offset costs such as an "influx of workers" but that the taxes may not be themselves considered to be part of the "benefit side" of a cost-benefit analysis. *Id.* at 509, especially footnote 58.

Whatever the merits of the argument between applicant and intervenor on whether local taxes may be a "direct benefit," we need not now decide that issue in order to determine whether the contention should be admitted. Staff has stated that this matter will be "clarified" in the Final Environmental Statement; however, staff apparently is not sure what the nature of this clarification will be. Staff Ans. (2) at 7, compare text and footnote 16. Given this uncertainty as to how the issue of "local costs" will be handled, we think it fair to say that Sunflower's contention addresses an area in which there is a genuine issue of fact concerning whether the matter will be properly handled. Hence, the basis for this contention has been satisfactorily specified.

Applicant also argues that this matter was not raised in a timely fashion, since all the environmental statements in the case — dating back to the construction stage

— dealt with it in the same way. This, however, neglects the fact that the case on which Sunflower relies was decided in 1978, subsequent to the earlier environmental statements prepared for the Perry plant. Hence, we conclude that the way this issue was handled in the DES provides good cause for the filing of this contention. Staff agrees. Staff Ans. (2) at 7. Since this is new information and none of the other factors affecting late contentions militates strongly against the admission of this contention, we have decided that it is proper to admit it.

The admitted contention, for which Sunflower shall be the lead intervenor, is:

> *Issue #11:* The Environmental Impact Statement (EIS) accords too much weight to increased employment and tax revenues to the local community, factors which may not be weighed directly in the cost-benefit balance.

Because the challenged portion of the DES will be altered before the EIS is issued, we have accepted the validity of Sunflower's contention. *See* LBP-81-24, 14 NRC 175, 190 (1981) (intervenors must make current filings of contentions, so the basis for a contention must be viewed in light of whether there is a *current deficiency* in the relevant documents, not in light of a new document which may be filed later). However, we will expect Sunflower to specify the basis for finding the Environmental Impact Statement to be deficient prior to the time when an evidentiary hearing may be held on this contention.

VI. MOTION TO RESUBMIT CONTENTION ON RADIOACTIVE WASTE

OCRE argues that a recent decision of the U.S. Court of Appeals for the District of Columbia requires this Board to admit its Contention 15, entitled "Safe Disposal/Storage of Radioactive Materials." *Natural Resources Defense Council v. NRC (NRDC)*, Civil Action No. 74-1586 (April 27, 1982). As OCRE correctly states, the majority in the *NRDC* case criticized the "zero-release assumption," which it found to be necessary to the validity of Table S-3, 10 CFR §51.20(e). OCRE Resubmit at 1-2.

However, as applicant correctly indicates, the U.S. Court of Appeals has stayed its mandate pending final resolution of the petition for rehearing *en banc* in that case. Hence, Table S3 continues to be in effect, as it may continue to be until the *NRDC* case is finally resolved. Until that mandate is issued, the rules of the Commission remain in effect and this Board continues to be bound by them. As a result, the Court of Appeals' decision does not as yet provide a ground for resubmission of this contention.

In light of the ground for our decision, we need not address applicant's argument that resubmission would be inappropriate even had the *NRDC* mandate been issued.

VII. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 12th day of July, 1982,

ORDERED

(1) The following contentions shall be admitted as issues in this proceeding:

Issue #9: Applicant has not demonstrated that the exposure of polymers to radiation during the prolonged operating history of Perry would not cause unsafe conditions to occur.

Issue #10: The Draft Environmental Impact Statement has not adequately considered whether Perry's operation will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

Issue #11: The Environmental Impact Statement (EIS) accords too much weight to increased employment and tax revenues to the local community, factors which may not be weighed directly in the cost-benefit balance.

(2) The lead intervenors for the admitted contentions shall be: Ohio Citizens for Responsible Energy (OCRE) for Issue #9 and the Sunflower Alliance Inc., *et al.* (Sunflower) for Issues #10 and 11.

(3) All other contentions submitted or resubmitted to the Board by OCRE or Sunflower on April 22, 1982, May 5, 1982 and June 1, 1982, are denied admission as issues in this proceeding.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

APPENDIX A

FILINGS CONCERNING LATE CONTENTIONS

NAME OF FILING	DATE	ABBREVIATED CITATION
OCRE Motion for Leave to File Its Contentions 17, 18, and 19	April 22, 1982	OCRE Motion
Motion for Leave to Submit Additional Contentions	May 5, 1982	Sunflower Motion
Applicant's Answer to OCRE Motion for Leave to File Its Contentions 17, 18, and 19	May 7, 1982	Applicant Ans. (1)
Response of NRC Staff to Motion of OCRE for Leave to File Its Contentions 17, 18, and 19	May 12, 1982	Staff Ans. (1)
Applicant's Answer to Sunflower Motion for Leave to Submit Additional Contentions	May 20, 1982	Applicant Ans. (2)
Response of NRC Staff to Motion of Sunflower for Leave to Submit Additional Contentions	May 25, 1982	Staff Ans. (2)
OCRE Reply [Concerning] Contentions 17, 18, and 19	June 1, 1982	OCRE Reply
OCRE Motion to Resubmit Contention 15	June 1, 1982	OCRE Resubmit
Applicant's Answer to OCRE Motion to Resubmit Contention 15	June 16, 1982	Applicant Ans. (3)
Response of NRC Staff [Concerning] OCRE Contention 15	June 21, 1982	Staff Ans. (3)
Reply Brief of Sunflower [Concerning] Two Late-Filed Contentions	June 21, 1982	Sunflower Reply

Cite as 16 NRC 208 (1982) **LBP-82-53A**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2) **July 19, 1982**

The Licensing Board revises its earlier decision (LBP-82-53) and dismisses a psychological stress contention based on a statement of policy issued by the Commission.

MEMORANDUM AND ORDER

(Concerning Psychological Stress Contention)

On July 16, 1982, the Nuclear Regulatory Commission issued a statement of policy, "Consideration of Psychological Stress Issues", 47 *Fed. Reg.* 31762 (July 22, 1982). The policy promulgated by the Commission excludes the consideration of psychological stress issues in our proceeding. We are directed to assure that three elements are present before we consider a psychological stress contention. *Id.* at 31762. One of those elements is that a traumatic event must already have occurred at the site in question. *Id.* Furthermore, we are told that "the only nuclear plant accident that has occurred to date that is sufficiently serious to trigger consideration of psychological stress under NEPA is the Three Mile Island Unit 2 accident." *Id.* at 31762-63.

Accordingly, Issue #10, admitted by our order of July 12, 1982 (LBP-82-53, 16 NRC 196), must be dismissed. Since this order is issued without benefit of briefs from the parties, we will be receptive to serious legal argument concerning the revision of this order. Motions for reconsideration or clarification must be filed within 20 days of receipt of this order.

ORDERED

That Issue #10, concerning consideration of psychological stress in the NEPA balance, is dismissed from this proceeding, but that parties may file motions for Reconsideration or Clarification of this Order within 20 days of receipt of this order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland,
July 19, 1982.

Cite as 16 NRC 210 (1982) **LBP-82-54**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H. Frye, III, Chairman
Dr. M. Stanley Livingston
Dr. Frank F. Hooper

In the Matter of **Docket No. 50-358-OL**

CINCINNATI GAS & ELECTRIC COMPANY,
et al.
(Zimmer Nuclear Power Station,
Unit 1) **July 15, 1982**

Licensing Board rules that an intervenor proposing eight untimely contentions challenging applicants' quality assurance procedures and character and competence to operate a nuclear facility failed to meet the standards of 10 CFR §2.714. In light of the seriousness of the issues, the Board adopts them *sua sponte*.

RULES OF PRACTICE: ADMISSIBILITY OF LATE-FILED CONTENTIONS

When untimely contentions are advanced on the eve of an initial decision which ordinarily would conclude Licensing Board consideration of an application, the proponent must furnish substantial justification for the delay.

RULES OF PRACTICE: REOPENING THE RECORD

When untimely proposed contentions raise issues so serious that a decision adverse to the applicant might require denial of an operating license, the Licensing Board may exercise its authority under 10 CFR §§2.718(j) and 2.760a to reopen the record and admit the contentions as Board-raised issues.

STANDING TO INTERVENE: REPRESENTATIONAL STANDING

It is a clear requirement for representational standing that an organization seeking to represent the interests of its members submit evidence of authorization to do so from at least one member with standing to participate in the proceeding.

MEMORANDUM AND ORDER

(MVPP's Motion for Leave to File New Contentions)

On May 18, 1982, the Miami Valley Power Project (MVPP), an Intervenor in this proceeding, filed a Motion for Leave to File New Contentions. That Motion states eight new contentions concerning two general areas: first, the status of quality assurance pertaining to the construction of the Zimmer Station; and second, the corporate character and competence of Cincinnati Gas and Electric Company, the lead Applicant, to operate a nuclear generating station. None of these contentions concern matters previously litigated in this case.

The Motion begins with a "History of Breakdown of Quality Assurance Program." This History alludes to reports issued by the NRC's Office of Inspection and Enforcement (I&E) of July, 1980, April, 1981, and November, 1981. It also alludes to a report of the NRC's Office of Inspector and Auditor (OIA) of August, 1981, which was released in November, 1981. The History notes that the I&E report of November, 1981, proposed a $200,000 fine which was paid in February, 1982, and that the April, 1981, I&E report led to the institution by CG&E, of a Quality Confirmation Program. The History also refers to various communications between Commission officials and Congress on this matter.

The History continues:

> It appeared that the regulatory system had identified and taken adequate corrective action against fundamental quality abuses at Zimmer. Recently, however, MVPP has learned that — (1) the OIA and IE Reports revealed only a small portion of the QA breakdown and resulting hardware damage; (2) the causes and responsibility for the QA breakdown rest squarely with high-level CG&E management; and (3) neither CG&E nor RIII have followed through with adequate corrective action. As a result, the RIII-imposed Quality Confirmation Program may further exacerbate the previous QA breakdown, while providing the public with false reassurances that a "final solution" has been achieved at Zimmer.

The Motion does not specifically identify the information which MVPP asserts it recently learned, or when that information was learned.

The Motion next recites the eight proposed contentions and their bases (the contentions and bases are set out in the Appendix), addresses the criteria for the acceptance of untimely contentions set out in 10 CFR §2.714, and indicates that MVPP intends to request a protective order which would prevent disclosure of the identities of certain witnesses who are CG&E employees except to the Board. These witnesses, it is alleged, will furnish further bases for the contentions.

Applicants take sharp issue with MVPP's Motion. They begin by attacking MVPP's status as a party to this proceeding, then attack the contentions as untimely, assert that MVPP must demonstrate a need to reopen the record, and conclude by attacking the contentions themselves. Applicants also attack MVPP's asserted need for a protective order as illustrating a desire to ". . . deny[] Applicants due process and strangl[e] this proceeding by delay and obfuscation" (Applicants' Answer, p. 49).

Staff supports MVPP's Motion:

> The Staff recognizes that there is validity to the Applicants' statement of the applicable law contained in Applicants' Answer. However, the breakdown in the Applicants' quality assurance program which has resulted in construction defects, and which, in the course of the ongoing investigation, may result in the discovery of more construction defects at the Zimmer plant raises a serious safety question. The information regarding the extent of the construction defects has the potential for resulting in the possible denial of an operating license. In the special circumstances of this case, the Staff's position is that the public interest is best served by the Board reopening the record and admitting the eight contentions proffered by MVPP as issues in controversy. (NRC Staff Response, p. 5; footnote omitted.)

Applicants' discussion of the decisions interpreting the requirements which must be met if tardy contentions are to be accepted does, as recognized by Staff, have validity. Further, Applicants' argument that MVPP has not met these requirements, particularly the "good cause" requirement, has much to recommend it. MVPP seems to have anticipated this argument. MVPP urges the Board to exercise its discretionary authority to admit the contentions.

Applicants also devote considerable time to the proposition that ". . . the group [MVPP] admitted as an intervenor by the Licensing Board in 1976 is not, in reality, the one pursuing these new contentions. A new entity, which is a legal stranger to the proceeding, has arrived to take the baton from previous entities which have participated in various prior stages of this proceeding, albeit under the same name" (Applicants' Answer, p. 5). Applicants base their argument on the fact that when MVPP was admitted as an intervenor, it was centered in Dayton, Ohio, and its members were customers of Dayton Power & Light Company, a co-Applicant. Now the organization is a "wholly owned subsidiary of the Cincinnati Alliance for Responsible Energy (CARE)" (CARE Press Release of May 18, 1982). According to Applicants, its members reside in or near Cincinnati.

Finally, Applicants assert that, at this very late stage of this proceeding, MVPP has furnished too little in the way of specific bases for its proposed contentions.

Applicants argue that no new information is cited by MVPP, and that its allusion to certain affidavits, interviews and internal Applicant documents should be ignored by the Board because they were not submitted in support of the Motion.

Ordinarily, in this state of affairs, we would have afforded MVPP an opportunity to respond to the arguments which Applicants have raised. See *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-565, 10 NRC 521 (1979). After having received that response, we would have ruled on the Motion.

However, because of the extraordinary situation presented by the MVPP Motion, we had not elected that procedure, and were about to issue a Memorandum and Order when MVPP's Reply to the Applicants and Staff was received. Consequently we have considered that Reply and find that it does not alter our conclusions.

In its Reply, MVPP addresses the points raised by Applicants. With regard to the factors to be addressed in order to satisfy the requirements of 10 CFR §2.714 for acceptance of tardy contentions, MVPP makes a very weak showing.

Pursuant to Section 2.714(a), a licensing board must balance the following factors in determining whether to grant an untimely motion to file contentions:

1) good cause, if any, for failure to file on time;
2) the availability of other means for protecting the petitioner's interests;
3) the extent to which petitioner's participation might reasonably assist in developing a sound record;
4) the extent to which the petitioner's interest will be represented by existing parties; and
5) the extent to which petitioner's participation will broaden the issues or delay the proceeding.

As to good cause for the late submission, MVPP fails to tell us when it learned the information which prompted the Motion and is vague as to precisely what this information is. Given the timing of its Motion (on the eve of an Initial Decision which normally would have concluded this Board's consideration of the license application) we think this failure is particularly significant. Its presentation on the availability of other means whereby its interest might be protected seems to miss the mark — it focuses instead on the proposition that Mr. Applegate's charges regarding quality assurance (QA) at Zimmer have been substantiated and that MVPP is responsible for bringing QA to the attention of the Board. Although brief, its presentation of its ability to assist in developing the record is borne out by its pleadings and related papers, and it seems self-evident that no other party will represent MVPP's interest if its Motion is denied. These two factors are the strongest in MVPP's favor. Finally, we believe that MVPP is clearly and indisputably wrong in its belief that granting its Motion will not delay the proceeding. If the Motion is denied, two matters relating to offsite emergency planning remain to be considered. The Board anticipates that these matters should be expeditiously concluded. On the other hand, MVPP's Motion raises matters which may well involve lengthy proceedings before this Board. In conclusion, we find that the balance of the five factors in this case tips against MVPP.

Applicants devote considerable discussion to the legal standards for reopening records and the proposition that MVPP has not satisfied them. We entertain some doubt that these standards are applicable. We do not mean to suggest that a less stringent standard should apply; however, we read the decisions on this point as relating to situations in which reopening is requested on an issue which was previously heard. This is not the situation here: none of the proposed contentions have been the subject of previous hearings.

In any event, MVPP's presentation in answer to Applicants suffers from the same difficulties identified above with respect to its showing of good cause for failure to file its proposed contentions in a timely fashion. While MVPP asserts that it proceeded expeditiously after it learned of new information, it does not specifically identify this information or tell us when it became available. In fact, that presentation indicates that MVPP has long been critical of the Zimmer QA program. More should have been furnished to indicate why, at a minimum, MVPP waited from November, 1981, to May, 1982, to file its contentions. Litigation must come to an end. A party should not wait until the eve of an Initial Decision which normally would conclude a proceeding before advancing new contentions unless substantial justification for that course is present.

However, as we have noted, this state of affairs is not ordinary. As Staff points out, the proposed contentions raise issues which are indeed serious. A decision adverse to Applicants could dictate the denial of an operating license. The Staff has identified Zimmer as a plant with a serious quality assurance breakdown. (Testimony of William J. Dircks before the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, U.S. House of Representatives, November 19, 1981.) Fines have been imposed by Staff and paid with respect to this breakdown. The Commissioners were recently briefed on this situation by Applicants and MVPP, indicating the continuing concern about the matter.

In these circumstances, we agree with the Staff's assessment that the public interest requires reopening of the record to litigate these contentions. We believe that this consideration overrides legal niceties pertaining to acceptance of untimely contentions and reopening of records. Consequently, we are exercising our authority pursuant to 10 CFR §§2.718(j) and 2.760a to reopen the record and admit the eight contentions advanced by MVPP as Board-raised issues. In our recent Initial Decision (LBP-82-48, 15 NRC 1549 (1982)) we specifically retained jurisdiction to take this step. *Cf. Carolina Power and Light Company* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), LBP-78-2, 7 NRC 83 (1978). In a Memorandum of even date herewith, we are advising the Commissioners of this action.

Further, we do not believe that Applicants are correct in their position that hearings on these contentions would be counterproductive to or at least ineffectual for improving the implementation of the Zimmer QA program as Applicants seem to assert. To the contrary, we believe that a full public airing of this matter will not only contribute to public confidence, but will also strengthen the QA program. Subjecting this program to the scrutiny of the Commission's adjudicatory process can only contribute, not detract, to reasonable assurance that the public health and safety will be protected.

With respect to the proposition that resources should be spent on inspections, not hearings, we note that the portion of the Commission's decision in *Public Service Company of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438 (1980) quoted by Applicants at pp. 42-43 of their Answer clearly is concerned with the husbanding of NRC Staff, not utility, resources. Moreover, we are here concerned with a licensing rather than an enforcement proceeding (*Marble Hill* was the latter). Consequently Applicants may not prevent litigation of a matter solely on the assertion that Staff is taking care of it. Finally, we think the fact that the Staff asserts the need for a hearing in this instance is also significant.

There remains the question of MVPP's status as an Intervenor in this proceeding. This is not the first time that Applicants have raised this issue. On March 8, 1979, Applicants sought to require MVPP to answer certain interrogatories with respect to its membership. In their Motion, Applicants alleged that MVPP apparently had changed from an organization comprised of Dayton residents to one comprised of Cincinnati residents. Applicants' interrogatories sought information on this point. We denied Applicants' Motion with respect to these interrogatories in an unpublished Order of April 17, 1979.

Applicants' present position essentially raises only one new fact: that MVPP is a "wholly-owned" subsidiary of CARE. MVPP, in its Reply, acknowledges this fact and states that it is "a Cincinnati grassroots citizens' group" (Reply, p. 2). Applicants do not demonstrate the materiality of the fact that MVPP is owned by CARE. MVPP participates as a representative of its members. Applicants' allegations with regard to MVPP's membership are the same now as they were in 1979, and MVPP now states that its members are Cincinnatians. Whether MVPP is "wholly owned" by CARE does not appear relevant to its representation of its members. For this reason, we treat Applicants' challenge on this point as raising nothing new which would dictate a different result from that we reached in April, 1979.

This result is in accord with *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-358, 4 NRC 558 (1976), where applicants sought to dismiss the intervention of an individual on the ground that the location of his residence, which was the basis of his standing, had been changed to a distant site. There the Appeal Board held:

> We are less confident than is the applicant that, taken by itself, Mr. Pozzi's apparent transfer of his residence from Louisiana to California would be enough to require the dismissal of his intervention. But that question need not be decided here. Just last year, we had occasion to observe that "intervention in an NRC adjudicatory proceeding does not carry with it a license to step into and out of the consideration of a particular issue at will." *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-288, 2 NRC 390, 393 (1975). Where, as here, a change of residence to an area not in proximity to the reactor is coupled with a virtual total failure on the part of the intervenor to have assumed a significant participational role in the proceeding, it is difficult to discern a useful purpose to be served in allowing the intervention to continue. This is so irrespective of whether one views an intervention simply in terms of the protection of the interest of the particular intervenor or, rather, as having a broader significance in the realm of the furtherance of a public interest.

4 NRC at 560, footnotes omitted.

Unlike the *River Bend* intervenor, MVPP has taken an active role in this proceeding from its inception. Nor do Applicants allege that it will not continue to do so. From all that now appears, it must be anticipated that MVPP will continue to actively participate and is in a position to make a substantial contribution to the record. We also note that the alleged change in MVPP's membership from Dayton residents to Cincinnati residents would appear to strengthen, rather than weaken, MVPP's standing.

Nonetheless, we note that at the time MVPP was permitted to intervene, it did not submit an authorization from any of its members to represent their interest. Such an authorization is now a clear requirement for an organization seeking to protect its members' interests. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377 (1979). Consequently, MVPP should now submit such an authorization from at least one of its members with standing to participate in this proceeding.

By a separate Notice, we are scheduling a prehearing conference to be held at Cincinnati, Ohio. At that conference we intend to discuss and set a schedule for consideration of the contentions set out in the Appendix, MVPP's Motion for a Protective Order, and any other matters relevant to hearing and resolution of the contentions.

ORDER

In consideration of the above, it is this 15th day of July, 1982,
ORDERED

1. The record in this proceeding is reopened;

2. The eight contentions set out in the Appendix are admitted as Board issues, and

3. By July 30, 1982, MVPP is to file an authorization from at least one MVPP member with standing to participate in this proceeding permitting MVPP to represent his or her interest.

Judges Hooper and Livingston concur, but were unavailable to sign this Memorandum and Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

John H. Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
July 15, 1982

APPENDIX

MIAMI VALLEY POWER PROJECT CONTENTIONS RAISED *SUA SPONTE* BY THE ATOMIC SAFETY AND LICENSING BOARD

1. CG&E and Kaiser Engineering, Inc. ("KEI") have failed to maintain sufficient quality assurance controls to ensure that the as-built condition of the plant reflects the final version of a design that complies with all applicable regulations and requirements for public health and safety, as required by 10 CFR Part 50, Appendix B.

To illustrate, installation has proceeded on the basis of construction aids rather than final drawings approved by the architect/engineer, Sargent and Lundy ("S&L"). Further, design revisions have not been fully incorporated and distributed to all relevant construction and QA personnel. As a result, the as-built condition of the plant does not match the approved final design. Even if the specified equipment were installed in the designated locations, however, S&L approved erroneous Design Document Changes ("DDC").

The basis for this contention includes IE Report §§4, 7, and Attachment A; affidavits from witnesses about the suppression pool, large-bore and small-bore piping, and hangers in the primary containment; interviews with current or former employees willing to testify; and internal CG&E and KEI documents.

2. CG&E and KEI have failed to maintain adequate material traceability to identify and document the history of all material, parts, components and welds, as required by 10 CFR Part 50, Appendix B, Criterion VIII.

To illustrate, it is impossible to identify and trace the history of items due to flaws such as inaccurate or overgeneralized blueprints; installation damage to materials; missing, incomplete, or unreliable records; and lack of identifying markings on equipment.

As a result, there exists little basis to rely on the existing traceability system. Guessing and unproven assumptions undermine the traceability records that do exist.

The basis for this contention includes IE Report §§4-7; affidavits that demonstrate that methods are inadequate to identify and control large and small bore piping, flanges, and welds, as illustrations that prove a breakdown throughout the plant; examples supplied by current or former employees, and internal CG&E and KEI documents.

3. CG&E and KEI have failed to maintain an adequate quality assurance program for vendor purchases, as required by 10 CFR Part 50, Appendix B, Criterion VIII.

The QA breakdown for vendor purchases has been systematic, from selection of individual vendors to toleration of hardware defects uncovered after installation. To illustrate, vendors have been accepted for the approved vendors list on the most superficial basis, such as unsupported memoranda from CG&E and/or KEI management, or a review of vendor QA manuals unsupported by on-site surveys. As a result, unqualified vendors have been placed on the Approved Vendors List ("AVL"). Once on the AVL list, it has been unreasonably difficult to remove the vendors despite poor performance.

CG&E has improperly made vendor purchases and then directed KEI to assume quality assurance responsibility for the purchases. KEI receipt inspection was improperly restricted to a check for transit damage and completeness. CG&E denied permission to KEI to conduct necessary source inspections of vendors. CG&E and KEI did not maintain reliable, comprehensive identification records and documentation packages, which resulted in uncertain traceability.

After receiving vendor purchases, the items frequently were upgraded from "non-essential" to "essential" status. As a result, items were installed in critical safety systems without first meeting the corresponding safety requirements. When QA/QC inspectors found defects in vendor hardware, they were instructed not to write up Nonconformance Reports ("NR").

The vendor QA breakdown spilled over into the rest of the plant. Inadequate traceability has led to confusion over which items are vendor purchases and which are not. Vendor purchases at Zimmer are not covered by on-site QA inspectors. As a result, in a significant number of cases items fabricated on-site have been erroneously defined-out of the CG&E and KEI QA systems.

The flaws described above are illustrative, not exhaustive. This contention applies to safety systems throughout the plant. Tens of thousands of purchase orders are questionable.

The basis for the contention includes IE Report §7; affidavits from current or former plant employees; interviews with current and former plant employees willing to testify; and internal CG&E and KEI documents.

4. CG&E and Kaiser have failed to maintain an adequate quality assurance program, to identify and correct construction deficiencies, as required by 10 CFR Part 50, Appendix B, Criterion XVI. This contention challenges the structure and premises of the QA program at Zimmer, rather than specific inspection hardware deficiencies.

To illustrate, traditionally there has not been a comprehensive quality assurance manual for either CG&E and KEI QA/QC personnel. Training procedures for QA/QC personnel have been inadequate, and some classes were taught by instructors with few qualifications. Until establishment of the Quality Confirmation Program, the KEI QA/QC program was severely understaff at CG&E's direction. Mandatory inspections did not occur of safety-related items. Necessary audits were not conducted for unjustifiably long periods. CG&E and KEI management have not always made good faith efforts to comply with audit recommendations. Corrective action procedures for identified construction defects have looked to correct QA defects prospectively while failing to reinspect for the damage that may have been previously overlooked. Underpinning all these structural flaws has been the core of the QA breakdown at Zimmer — the lack of independence for QA/QC departments and personnel from their construction counterparts, in both the CG&E and KEI organizations. The absence of even a minimally acceptable QA program casts a shadow over all safety-related systems at Zimmer.

The basis for this contention includes the congressional testimony and public statements of NRC officials, Exhibits 1-6; IE Report §§4-7 and Attachment A; affidavits from and interviews with current and former employees; and internal CG&E and KEI documents.

5. CG&E and KEI officials failed to maintain adequate controls to process and respond to internal Nonconformance Reports identifying violations of internal or government requirements. To illustrate the scope of the problem, the IE Report analyzed in-depth 26 reports of nonconforming conditions out of over 1000 that were voided between 1978 and 1981. The IE Report concluded that 25 out of the 26 reports were voided erroneously. Potentially thousands of NR's have been improperly voided or discarded under the QA program.

To illustrate, KEI QA inspectors in practice have been ordered not to write NR's on procedural or "software" deficiencies. A convoluted system of multiple approvals makes it unreasonably difficult to issue NR's. CG&E has developed a bewildering system of reports on nonconforming conditions including Surveillance Reports, Inspection Reports, Corrective Action Recommendations ("CAR") and In-Process Inspection Deficiency Reports, punch lists and exception lists. These QA report categories avoid the accountability and NRC oversight of the NR system, and thus violate Appendix B.

Many NR's have been eliminated entirely from the QA system. For example, NR's have been voided as "not issued," and so expunged from the QA records' system. In a significant number of cases, NR's voided as "Not Issued" cannot now be found.

Due to this high ratio of improperly voided NR's Zimmer contains an unknown number of dormant, identified deficiencies which were found and later lost or dispositioned without correcting the identified defects. Any decision to license Zimmer is premature until all QA reports on nonconforming conditions are located, entered into the NR system and properly dispositioned through adequate corrective action.

The basis for this contention includes IE Report §§4-7; the OIA Report; affidavits and interviews with current and former Zimmer employee witnesses; and internal CG&E and KEI documents.

6. CG&E and KEI have engaged in illegal retaliation against QA/QC personnel who attempt diligently to perform their duties or who disclose QA problems to the NRC. This retaliation violates 10 CFR Part 19 and Part 50, Appendix B, Criterion I. Harassment occurred on all levels. Both CG&E and KEI openly tried to discourage or neutralize QA/QC initiatives, internal disclosures through this retaliation, or employee disclosures to the NRC.

To illustrate, construction personnel on at least one occasion physically attacked, and repeatedly intimidated QA inspectors. QC personnel attempting to conduct inspections were doused with buckets of water and scattered with high-pressure fire hoses. Management officials did not pursue and discipline the offenders, nor did they deter repeat harassment.

KEI top management berated QC inspectors and supervisors for writing up nonconformances. Both CG&E and KEI management retaliated against employees who pursued significant corrective action programs for QA violations, or disclosed serious violations to the NRC during its 1981 reinvestigation. These reprisals included dismissal, demotions and job transfers.

Employees who retracted or modified their NRC statements, after interviews with CG&E counsel, kept their supervisory positions. This pattern stretches from the mid-1970's to 1982.

CG&E removed Butler Services, Inc. and Peabody Magnaflux, Inc., from responsibilities for QC inspection and radiographs, respectively, in an effort to destroy the independence of this portion of the QA program.

On both the individual and institutional level, reprisal victims were replaced with substitutes whose qualifications and commitments to sound QA practices are open to serious challenge. These examples are illustrative, not exhaustive, of an environment where it takes repeated acts of courage for QA/QC personnel to do their jobs rights. QC inspections and findings that arose out of fear and pressure are an inadequate basis to satisfy public health and safety requirements.

The basis for this contention includes IE Report §§4 and 6; CG&E letter concerning fine, attached and incorporated herein as exhibit 7; affidavits from and interviews with witnesses; and additional documents.

7. The CG&E Quality Confirmation Program ("QCP") is inadequate to mitigate or remedy the serious consequences of QA breakdown at Zimmer. On April 8, 1981 RIII imposed on the Zimmer QA program the QCP as a structural reform intended to neutralize the previous abuses. CG&E obtained NRC approval for the QCP and administers it on an ongoing basis. The QCP has led to a welcome increase of QA personnel. However, the QCP is fundamentally deficient in that its scope is too narrow and its implementation spotty.

To illustrate, the QCP plan presented as Exhibit 17 of the IE Report gives broad discretion to CG&E, instead of clearly defined specific duties. This fails to guarantee a full solution for the quality assurance program "totally out of control."

To illustrate further, the QCP is only a review and sampling program of individual deficiencies, not a 100-percent reinspection of all safety-related systems. CG&E has the discretion to select small samples for reinspections that may give a clean bill of health to large safety systems which remain shot through with structural deficiencies.

The QCP applies only to deficiencies identified by the NRC. New information obtained by MVPP evidences potential QA and hardware problems ranging far beyond those disclosed in the IE Report and demonstrates the need for a 100-percent reinspection of all safety equipment installed on-site. A review based on the public record to date and the even smaller sampling reinspection program is a hopelessly inadequate response to a near-decade of substandard quality control at Zimmer.

This list does not claim to be comprehensive, but represents merely a few structural flaws in the QCP based on information currently available to MVPP. Additional weaknesses will be identified as the details of the QCP are made available.

The basis for this contention includes IE Report Exhibit 17; conversations with RIII management officials; and affidavits and interviews with witnesses willing to testify.

8. CG&E lacks the necessary character and competence to operate a nuclear power plant. In *Houston Lighting and Power Company* (South Texas Project, Units 1 and 2), CLI-80-32, 12 NRC 281 (1980), the Commission held that abdication of responsibility for construction to its contractor or abdication of knowledge about construction activities by a prospective licensee is an independent, sufficient basis to deny an operating license: "In large part, decisions about licenses are predictive in nature, and the Commission cannot ignore abdication of

responsibility or abdication of knowledge by a license applicant when it is called upon to decide if a license for a nuclear facility should be granted." 12 NRC at 291.

The most charitable explanation for the massive QA breakdown is that CG&E abdicated its duty to devise a technically competent QA program and to monitor that program. This generous assessment of CG&E's performance during the construction phase is consistent with the conclusions of the IE Report, and certainly sufficient to deny Applicant an operating license.

In fact, CG&E has been well aware of KEI's QA program. CG&E management made key decisions about the QA program and has had a cominant role since at least 1974. (Examples of internal memoranda confirming this relationship are attached and incorporated herein as Exhibit 8.) On the public record, the IE Report references over a dozen examples of CG&E knowledge of or participation in activities covered by the RIII investigation, despite its conclusions. (See, *e.g.*, IE Report Exhibits 4, 5 and 52, attached and incorporated herein as Exhibit 9 by reference.) According to Exhibit 52 of the IE Report, former CG&E QA manager William Schwiers said that CG&E suffers the same lack of independence from construction as Kaiser. He also admitted that CG&E management was responsible for refusing to increase KEI's requests for additional QA/QC personnel.

CG&E also denied Kaiser authorization to spend funds for adequate QA staff and training, and the CG&E construction department generally dominated the Applicant's QA program. CG&E has adopted the same philosophy the NRC attributed to KEI — the perspective that QA activities are an unwanted impediment to construction. CG&E made the key decisions in the construction. CG&E made the key decisions in the QA program for vendor purchases, on occasion despite objections from Kaiser's QA personnel. CG&E mishandled QA/QC records and sustained clearly inadequate QA procedures equivalent to those of KEI.

CG&E activities in other context raise serious concerns about its character. A comparison of the public record, and CG&E correspondence with a church shareholder organization of American Electric Power, a co-owner of Zimmer, is illustrative. An attached CG&E letter sent to the shareholder organization is undeniably inaccurate in its description of the RIII reinvestigation, despite the NRC's prior notice to CG&E of serious deficiencies. The NRC's "early" findings were so significant that the Quality Confirmation Program orders instituted on April 8, 1981, over 7 months before the IE Report was released. (Compare CG&E letter of April 3, 1981 with the IE Report at 155-57, attached and incorporated herein as Exhibit 10.)

Similarly, in November and December 1981, CG&E representatives publicly made blanket statements denying hardware problems in general and *any single* defective weld in particular, despite a previous notice of NRC laboratory tests that demonstrated these deficiencies. Compare IE Report No. 50-358/81-27 at 7-8, with a November 26, 1981 news article, attached and enclosed herein as Exhibit

11. On November 16, 10 days before CG&E President Dickhoners' assertions of a clean hardware bill of health, the NRC informed the Applicant, *inter alia:*

> The visual examination of piping welds that were conducted revealed six welds which exceeded the ASME Code allowable reinforcement height on the outside surface of the weld.

For each of the above inaccurate self-serving statements by CG&E, evidence was not publicly available at that time to refute the Applicant's misrepresentations.

In *Houston Power and Lighting, supra*, the Commission emphasized that false statements to the NRC, and particularly intentional false statements, are grounds to deny an operating license. There is evidence that records relating to such basic QA defects as material traceability and personnel qualifications were intentionally falsified. Similarly the OIA Report disclosed that construction crews made informal, undocumented repairs on welds. These repairs were made concurrently with the NRC inspectors' review of inaccurate paperwork on the very same welds. Although MVPP does not claim at the present time that CG&E officials were responsible for any deliberate falsification, such significant misconduct evidences applicant's failure to supervise the QA program to ensure its independent and proper operation.

In some instances KEI employees engaged in deceptive conduct toward the NRC. For example, when RIII requested copies of all essential, and later nonessential voided nonconformance reports, KEI personnel did not include voided NR's improperly filed with Inspection reports. Their excuse was that RIII had not asked for voided NR's filed with Inspection Reports.

Any remaining doubts about the necessity for a full hearing on CG&E's character and competence should be resolved by a currently-suspended criminal investigation of QA abuses, as well as the congressional call to pursue the probe more aggressively. Last summer OIA began a criminal investigation into falsified QA reports and failure to conduct mandatory inspections. However, the OIA criminal probe has been suspended until some time between August and October 1982, when Part II of the RIII reinvestigation will be completed. The issues addressed in Exhibit 52 of the IE Report, the interview with CG&E QA manager William Schwiers, suggest that CG&E officials may have been targets of the investigation. NRC investigators inquired into the role of CG&E Vice President Earl Borgman. This criminal investigation was so significant that on October 27 and 28, 1981 the NRC Commissioners considered the ongoing law enforcement proceedings in a closed meeting on Zimmer.

A March 19, 1982 letter from Intervenor's counsel to the United States Attorney for the Southern District of Ohio is attached and incorporated herein as Exhibit 12, along with the accompanying original exhibits.

Evidence of harassment and retaliation toward employees coupled with criminal falsification of records has led to calls from Congress for a criminal investigation. As Representative Toby Moffett (D-Conn.) explained:

> Such harassment, as this Subcommittee has already found through previous investigations and as the NRC has now admitted in its own investigation, are precisely the sort of actions that occurred at the Zimmer site near Cincinnati.
>
> These new criminal penalties were not placed in the Atomic Energy Act as window-dressing. The Congress provided for criminal penalties for utility failures to obey NRC safety rules for a very important reason: the public health can be endangered by nuclear crimes just as surely as it can be by street crimes.

Congressman Moffett's December 14, 1981, opening statement at congressional hearings is attached and incorporated herein as Exhibit 13.

Evidence of non-QA related criminal and noncriminal misconduct must also be examined before this Board in granting Applicant an operating license. Witnesses have identified on-site criminal misconduct including diversion of nuclear materials to underground businesses that sell belt-buckles manufactured on-site. Witnesses have also provided affidavits detailing widespread illegal gambling including horse-racing bets placed from the security guard's desk on the seventh floor where nuclear fuel is kept. Dangerous alcohol and narcotics use on-site further demonstrates CG&E's abdication of its duties. (See, *e.g.*, a January 16, 1981 affidavit from Jeffrey Hyde, attached and incorporated herein as Exhibit 14.)

The above overview helps explain why previous QA/QC retaliation and failure to respond adequately to identified deficiencies continues to date. The same management organizations are making the decisions. Through the CG&E-led Quality Confirmation Program, RIII in effect may have ordered the fox to strengthen its control over the henhouse. It is imperative that an operating license not be granted without a full hearing into Applicant's character and competence.

The basis for this contention is the OIA Report at 33-5; IE Report in general; and documentation, affidavits and interviews with witnesses willing to testify at hearings.

Cite as 16 NRC 225 (1982) **LBP-82-55**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Herbert Grossman, Chairman
Dr. Frank F. Hooper
Gustave A. Linenberger

In the Matter of **Docket No. 50-395-OL**

SOUTH CAROLINA ELECTRIC AND GAS COMPANY, ***et al.***
(Virgil C. Summer Nuclear Station, Unit 1) **July 20, 1982**

In this Partial Initial Decision the Licensing Board resolves the seismic issues in controversy in favor of plant safety concluding that the seismic safety of the Summer Nuclear Plant will be assured if the operating license is made subject to two conditions: (1) that seismic monitoring be continued at least until December 31, 1983, and that the NRC Staff reevaluate at that time the need for further monitoring; and (2) that Applicants successfully complete within the first year of operation a confirmatory program to demonstrate to the NRC Staff's satisfaction that explicit safety margins exist for each component necessary for shutdown and continued heat removal in the event of the maximum potential shallow earthquake.

TECHNICAL ISSUES DISCUSSED

- Reservoir-induced seismicity
  - Occurrence after impoundment
  - Shallow earthquakes and near-source earthquakes

- Ground motion
  - Peak accelerations
  - Amplification from bedrock (soil, topographical, soil-pad interaction)
  - Response spectra
  - Theoretical models and empirical data
- Magnitude potential
  - Deep vs. shallow earthquakes
  - Source dimension
  - Deviatoric stress
- Seismic structural capacity
  - Engineered structures
  - Equipment and components
  - Natural frequencies and reduction of motion (imbedment of foundation)

APPEARANCES

On behalf of the Applicants:
Joseph B. Knotts, Jr., Esq., Debevoise & Liberman, Washington, D.C., and **Randolph R. Mahan, Esq.**, Columbia, South Carolina

On behalf of the State of South Carolina:
Richard P. Wilson, Esq., Assistant Attorney General, Columbia, South Carolina

On behalf of the NRC Staff:
Steven Goldberg, Esq., and **Mitzi A. Young, Esq.**, Washington, D.C.

On behalf of the Intervenor:
Brett Allen Bursey, *pro se*, Little Mountain, South Carolina

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PARTIAL INITIAL DECISION
(Seismic Issues)

I. INTRODUCTION

This matter is a contested operating license proceeding within the meaning of 10 CFR §2.4(n). This partial initial decision considers the application for issuance of a facility operating license to the South Carolina Electric & Gas Company ("SCE&G") and the South Carolina Public Service Authority ("SCPSA") (hereinafter "Applicants") to authorize the operation of the Virgil C. Summer Nuclear Station, Unit 1. The facility consists of a single pressurized water reactor located on SCE&G's site in Fairfield County, South Carolina. The reactor is designed to operate at core power levels up to 2785 thermal megawatts, with a net electrical output of approximately 900 megawatts. The facility is adjacent to Monticello Impoundment, an SCE&G-owned and operated pumped storage hydroelectric project (Federal Energy Regulatory Commission Project 1894), about one mile east of the Broad River and approximately twenty-six (26) miles northwest of Columbia, South Carolina.

On June 30, 1971, SCE&G, then the sole Applicant, filed an application with the Atomic Energy Commission, now the Nuclear Regulatory Commission, for a permit to construct and operate the V. C. Summer Nuclear Station, Unit 1. Construction Permit No. CPPR-94 was issued on March 21, 1973, following reviews by the Commission's Regulatory Staff and the Advisory Committee on Reactor Safeguards, as well as public hearings before an Atomic Safety and Licensing Board in Winnsboro, South Carolina on January 29-30, 1973. LBP-73-11, 6 AEC 213 (1973); *aff'd*, ALAB-114, 6 AEC 253 (1973).

On May 17, 1974, SCE&G filed an application to amend its construction permit to add SCPSA as co-owner and co-licensee, having executed a sale of a one-third interest in the facility to SCPSA on October 18, 1973.

On April 18, 1977, the Commission published in the *Federal Register* (42 *Fed. Reg.* 20203) a notice of the receipt of an application by the Applicants for a facility operating license for the Summer facility. In response to that notice, Brett Allen Bursey ("Intervenor") filed a "Petition to Intervene" dated May 27, 1977. In that petition, Intervenor requested hearings. On June 8, 1977, this Atomic Safety and Licensing Board was established to rule on petitions to intervene. On July 15, 1977, the Board[1] issued an Order granting Mr. Bursey leave to intervene.[2] On

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[1] Pursuant to Notice issued January 9, 1978, the Board was reconstituted to reflect appointment of Ivan W. Smith, Esq. to replace former Chairman Fredric J. Coufal, Esq. whose schedule did not allow him to continue in this case. Pursuant to Notice issued January 17, 1980, the Board was again reconstituted to reflect appointment of the current Chairman, Herbert Grossman to replace former Chairman Ivan W. Smith, Esq., whose schedule did not allow him to continue in this case.

[2] The intervention was granted over Applicant's objections as to timeliness and failure to submit a contention meeting the requirements of the NRC's regulations.

March 23, 1978, the Board issued a Memorandum and Order granting the State of South Carolina's March 10, 1978 petition to participate as an interested State pursuant to 10 CFR §2.715(c).

On March 23, 1981 an organization comprised of Fairfield County residents, Fairfield United Action ("FUA"), filed a petition for leave to intervene, to which it attached twenty-seven proposed contentions and their bases. Applicants and NRC Staff opposed the petition. On April 30, the Board granted the FUA petition and accepted ten (10) of its contentions for litigation. The ten accepted contentions related to two general subject matters — Applicants' management capabilities and adequacy of emergency planning efforts. Applicants and the NRC Staff appealed the Board's order admitting FUA. On June 1, 1981 the Atomic Safety and Licensing Appeal Board issued its decision reversing this Board's order insofar as it granted the intervention petition of FUA. ALAB-642, 13 NRC 881. The Commission chose not to review the Appeal Board's decision. On appeal to the D.C. Court of Appeals, ALAB-642 was later affirmed in an unpublished opinion.

This Partial Initial Decision involves only the seismic issues in controversy. A supplemental partial initial decision will be issued shortly covering the remaining issues. With regard to the seismic issues, the Board finds in favor of plant safety in the event certain conditions are met. They involve continued seismic monitoring and the successful completion during the plant's first year of operation of a confirmatory program involving seismic safety margins of plant equipment and components. If the other matters are resolved satisfactorily, the granting of the operating license will be made subject to these conditions.

II. OPINION

The major seismic issues relate to earthquakes induced by the impoundment of the Monticello Reservoir, which was created as part of a planned electric power generating complex. The Monticello Reservoir stores water for a pumped storage facility, provides cooling water for the nuclear plant, and serves as a make-up source for emergency cooling water. Find. 1.[3]

Filling of the reservoir began on December 3, 1977, and full pond elevation occurred on February 8, 1978. Prior to the filling of the reservoir the USGS seismograph station at Jenkinsville (3 miles east-southeast of the site) had recorded about one local low level earthquake every six days from 1974 to 1977. After impoundment of the reservoir the number of events had increased to several hundred per week. The largest earthquake at the Monticello Reservoir known to NRC Staff at the date of its February 1981 SER was the magnitude (M_L) 2.8 event that occurred on August 27, 1978. The earthquake occurred about a mile northwest of the plant at a depth of approximately 110 meters. Find. 2.

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[3] "Find." references are to the Board's Findings of Fact, *infra*

A U.S. Geological Survey strong motion accelerometer located about 640 meters southeast of the epicenter and within a mile of the Summer plant produced a strong motion record of the event. The record was significant because the peak horizontal acceleration of 0.25*g* exceeded the maximum horizontal ground acceleration for the safe shutdown earthquake (SSE) of 0.15*g* for rock foundations. This response spectra anchor point of 0.15*g* would be applicable to the main Summer facility which was built on rock. The SSE peak acceleration for structures founded on soil was 0.25*g*. Find. 3.

In addition to mentioning the actual exceedance[4] of the design basis peak acceleration evident in the strong motion record of the 2.8 M_L event, Staff's SER reflected additional concerns. It indicated that there were conflicting estimates of expected magnitudes for future events, as follows (Find. 4): Applicants — 4.0; Staff — 4.5; ACRS — around 5; and differing opinion of Staff seismologist — 5.3. Higher magnitude earthquakes would be expected to produce higher peak ground accelerations.

Intervenor Bursey's original contention, submitted before the Monticello Reservoir was filled, referred to the possibility of reservoir-induced seismicity causing 5.0 magnitude earthquakes. As restated in the Board's Prehearing Conference Order of April 24, 1978, the contention reads as follows (Find. 5):

Contention A 4

> (a) The FSAR is inadequate with respect to the description of seismic activity in the area of the Summer plant site;
>
> (b) The plans for monitoring site seismicity are inadequate in that they do not consider the seismic effect of filling a reservoir. Site seismicity should be monitored for one year subsequent to filling the reservoir and prior to granting of the operating license.

At the final Prehearing Conference held on April 7 and 8, 1981, Intervenor Bursey submitted his summary of contentions in which he contended that a near-field magnitude of 5.3 should be used for assessing seismic safety. He also referred to the recently discovered Wateree Creek fault near the reactor as posing new seismic considerations that must be resolved prior to licensing. The Wateree Creek fault had been mapped and reported in 1980 and was the subject of some discussion in the February, 1981 SER, including the possibility of some association of the fault with the RIS (reservoir-induced seismicity). In addition to the RIS and the Wateree Creek fault, the SER also discussed the Charleston earthquake of 1886 which had been localized to the immediate Charleston area at the construction permit stage and was not assumed to migrate outside of that region for determining ground motion at the Summer site. *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Unit 1), LBP-73-11, 6 AEC 213, 218 (1973). The February, 1981 operating license SER reexamined the evidence with regard to localizing the 1886 event to the immediate Charleston area and reaffirmed the construction permit conclusion. Find. 6.

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[4] The word "exceedance," although not found in standard dictionaries, is a statistical term that was used by the seismology experts throughout the hearing. See, *e.g.*, Staff's reference to "high frequency exceedances." Staff's updated testimony, ff. Tr. 5758, at 4.

In our unpublished Order of May 13, 1981 following the final prehearing conference (at 4-6), the Board permitted a "broadening" of Intervenor's restated contention in view of the changed situation (*i.e.*, the newly created RIS and the discovery of the Wateree Creek fault) since the contention was adopted, as discussed in the SER. We broadened the seismic contention to include all of the seismic considerations covered in the SER and extended the period during which Intervenor claimed the monitoring of seismicity should be continued until the end of 1983. Find. 7.

We might point out, however, that we did not intend to, nor did we, broaden the contention to include a *de novo* reexamination of matters determined at the construction permit stage or an examination of any other matter that could not fairly be considered as being covered by Intervenor's original contention as supplemented by the newly-discovered information contained in the SER. We did not go beyond the contention to consider matters under our *sua sponte* authority. Specifically, we considered all of the matters discussed in the SER relating to RIS and the Wateree Creek fault, and Intervenor's contention that the seismic monitoring should be continued through 1983, as an updating of his original contention in light of the new matters disclosed by the SER. With regard to the Charleston earthquake, we intended only to examine the "relation between the reservoir-induced seismicity and the Charleston tectonic earthquake" of 1886 (Remainder of Order Following Fourth Prehearing Conf., May 13, 1981, at 5), and to determine whether, as a preliminary matter, the knowledge acquired since the construction permit proceeding cast any doubt upon the reasonableness of the determination that the 1886 event should be localized to the Charleston area. We are satisfied that, even under critical Board examination, no evidence has been introduced that suggests that a *de novo* reexamination is advisable of the construction permit finding that the 1886 event can be localized to the Charleston area.[5] See Tr. 919-23, 960, 1154-5.

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[5] Our opinion should not be read as implying agreement or disagreement with the conclusions of the construction permit board that the 1886 event should be localized to the Charleston area. We make no independent determination that the historical seismicity in the area (*i.e.*, the continuing focal mapping of low and moderate seismic events which appear to be concentrated around the local Charleston area) is sufficient, factually or legally, to establish that the 1886 event is "reasonably related to tectonic structures" in the local Charleston area so that that earthquake need not be migrated to the boundary of the Piedmont and Coastal Plain provinces near the site. See Part 100, Appendix A, V.(a)(1)(iii). We recognize that scientific opinion on localizing the 1886 event to Charleston is mixed now as it was at the

(Continued)

Applicants and Staff presented their initial seismic testimony from June 22 to 24, 1981. Intervenor and the State of South Carolina presented no evidence. Applicants, Staff and the differing Staff seismologist continued to disagree on the anticipated maximum event that they had set at 4.0 M_L, 4.5 M_L and 5.3 M_L, respectively. Applicants based their prediction of a maximum earthquake of M_L = 4.0 primarily on a model by Professor James Brune of the University of California at San Diego. Stf. Ex. 1 at 2-24; Applicants Exs. 2, 3, 4; Tr. 835-36. Although Applicants continued to disagree with the higher estimates of magnitude made by Staff, ACRS, and the differing Staff seismologist, they calculated peak ground accelerations for these higher magnitude events also through use of the Brune model in conjunction with formulas by Hanks and McGuire needed to adapt the Brune model to near-source earthquakes. That method depends on estimates of stress drop, seismic moment, shear wave velocity, density and attenuation. Using a constant stress drop of 25 bars, but varying the source distance with the increasing magnitude, Applicants determined zero-period accelerations (ZPA) for various magnitude earthquakes, as follows: 4.0 M_L = 0.14g ZPA; 4.5 M_L = 0.22g ZPA; 5.0 M_L = 0.20g ZPA and 5.5 M_L = 0.22g ZPA. Even though 0.22g ZPA exceeded the design basis acceleration of 0.15g for the Summer plant built on rock, Applicants attempted to demonstrate that the use of a 0.22g peak acceleration anchor point for response spectra derived from amplification ratios determined by Johnson and Traubenik and using the structural damping allowance of 7% under Regulatory Guide 1.61 would not exceed the original SSE spectrum calculated at 2% damping except in frequencies higher than 9 hertz (cycles per second). Acceptance of these exceedances could then be justified on the basis of certain built-in conservatisms used in the facility design. Finds. 8, 10, 11.

The maximum ZPA of 0.22g arrived at through the Hanks and McGuire adaptation of Brune model ("H-M model") had already apparently been exceeded at the strong motion accelerometer, which had recorded ground motion of 0.25g during a 2.8 M_L event on August 27, 1978. Applicants attributed that reading to amplification of motion in the 56-foot soil column underneath the strong motion accelerometer. The Applicants used deconvolution procedures to infer ground motion at bedrock of about half the value of the motion recorded at the surface. Their deconvoluted motion estimate of 0.130g and 0.106g for the two horizontal components for the August 27, 1978 event was found to compare well with a peak acceleration of 0.121g calculated for a similar magnitude event under the Brune model using a stress drop of 25 bars and a source-to-site distance of 1 kilometer. Find. 16.

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construction permit stage. We determine only that the construction permit findings were reasonable in light of the information known then or now and that none of the new information raises sufficient concern to warrant reopening the issue

Although Staff used methods other than the Brune model to calculate a maximum magnitude earthquake (and arrived at a 4.5 M_L compared to Applicants' 4.0 M_L), it relied exclusively on Applicants' H-M adaptation of the Brune model to determine peak ground acceleration. Furthermore, it concluded that Applicants had demonstrated that the ground motion was amplified in the soil column at the strong motion accelerometer site. Find. 17.

Applicants presented most of their case on seismicity[6] and Staff presented and concluded its seismic presentation during the week of June 22, 1981. During the week of July 6, 1981 when the hearing was not in session, the Board informed the parties during a conference call that it intended to call independent experts as Board witnesses. At the hearing the following week, the Board confirmed this course of action. In response to a Staff request, the Board Chairman identified four areas of specific concern: (1) whether "the [*g*] values suggested for the different magnitudes have been fully substantiated by the testimony"; (2) whether "the application of those time histories pegged to these [*g*] values have been fully substantiated"; (3) whether there has been a "full enough discourse on the accelerometer readings at Jenkinsville"; and (4) "whether the Charleston earthquake ought to be migrated to the periphery of the Coastal province or the edge of the Piedmont province." Find. 19.

Several days later, the Licensing Board discussed these concerns further. Tr. 3790-3817. It focused on three principal issues: (1) peak acceleration (*g*) values for ground motion, (2) appropriate response spectra, and (3) earthquake magnitudes. The major portion of the Board's concern related to Staff's acceptance of Applicants' use of the Hanks and McGuire adaptation of the Brune model to determine the *g* values. It questioned whether Staff's review of Applicants' use of this model had been sufficiently critical with regard to whether that model was an appropriate one to use, and whether the proper values had been used as inputs in applying that model. Find. 20. The Board Chairman suggested that, in general, an applicant will try to find the best material and the best experts that support its case. Thus, if the Staff review had not been critical enough of Applicants' analysis, the Board could be handicapped in making its own determination. Tr. 3790-93.

The Board questioned whether the exclusive use of Applicants' ground motion model to determine the appropriate *g* values and the information used in the calculation (*i.e.*, stress drop, source diameter, etc.) was the "best kind of information to look at." The Board suggested that the Staff might also look at empirical data correlating ground motion with different magnitude earthquakes and might even find some "better data" to look at. Tr. 3793-94. The Board also indicated that it expected the independent Board witnesses to update the strong motion figures at the Summer site by at least consulting with "the person who was responsible for the accelerometers at Jenkinsville." Find. 20.

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[6] All that was left to be presented by Applicants on the seismic issue was some brief testimony to indicate that it would not be economically feasible to unload the Monticello Reservoir to test the seismic effects of unloading, and the recall of a witness to lay a further foundation for an exhibit that had been stricken for lack of foundation.

As to the issue of migrating the Charleston earthquake to the perimeter of the Piedmont province, the Board indicated that it was in basic agreement with the arguments of Applicants' counsel (given at Tr. 2520-21) that this issue was resolved at the construction permit stage and would only become a question for the operating license proceeding if there were "any drastic change in the information since then." We did not see that matter as a "critical issue in the case." As indicated above, although the experts might differ on localizing a repetition of the 1886 event to the immediate Charleston area, there has been no drastic change in the information available to this Board over what was considered during the construction permit stage that would justify reopening the issue. Find. 21.

Staff objected to our calling the Board witnesses and petitioned for directed certification of that ruling. After extensive briefing by the parties, a series of issuances by the Appeal Board, and responses by us to those issuances (as directed by the Appeal Board), the Licensing Board was permitted to call its own experts after reviewing supplementary testimony filed by the Staff. A full discussion of the procedural aspects of our calling the Board witnesses is included as an Appendix, *infra*, to this initial decision.

Staff's supplemental testimony, received by us on September 15, 1981, reaffirmed Staff's reliance upon Applicants' ground motion model — the H-M adaptation of the Brune model to determine a peak acceleration anchor point on which to anchor the response spectra based upon amplification ratios of Johnson and Traubenik. Staff further reaffirmed the use of 25 bars of stress drop in the formula. Find. 23.

At the further seismic hearings held January 11-16, 1982, Applicants' ground motion model was shown to be unreliable. The 25-bar stress drop limitation based upon calculations made of the August 1978 event was shown to have been considerably exceeded in two subsequent events. For these events, stress drop could be reasonably calculated at from 37 to 100 bars, depending upon the exactness of the formula and the variations in parameters, such as cutoff frequency and digitization rate. The Board accepts as a best estimate for these events stress drops of approximately 60 to 65 bars. A doubling of stress drop would approximately double the resulting calculated ground acceleration. Furthermore, stress drops at Monticello were shown to be highly variable for different events, rather than stable as suggested earlier. As the further testimony disclosed, even in California where stress drops are considered to be *relatively* stable, they have been shown to increase with increasing magnitude within the magnitude range of interest. Finds. 27-29, 31-33, 110.

As to the response spectra based upon the amplification ratios of Johnson and Traubenik, Staff later reversed its position and considered them inappropriate for the high frequency ground motion from shallow RIS, the only type of seismicity covered in the original evaluation. The Board agrees. Finds. 35, 82, 111.

The further seismic hearings in January of 1982 also did not establish any support for Applicants' position that the peak acceleration of 0.25*g* recorded at Monticello during the August 27, 1978 event had been amplified through the soil column. The evidence suggested that there was no amplification due to soil or topography. In addition, the record also disclosed a subsequent reading, on October 16, 1979, of 0.35*g*, which even further surpassed the SSE peak acceleration anchor point of 0.15*g* on rock. No amplification could be established for that reading, either. Finds. 25, 36-49, 112.

However, at the January 1982 hearings, other lines of evidence established the seismic safety of the nuclear power plant structures. Staff differentiated between normal tectonic depth earthquakes (occurring 5-16 km deep) at which a maximum 4.5 M_L earthquake might be expected, and shallow earthquakes occurring in the upper 3 km. For the normal tectonic depth earthquakes, empirical observations from historical earthquakes of peak accelerations and epicentral intensities, and response spectra derived from earthquakes at Mammoth Lakes and Oroville, California, establish ground motion limits within the SSE design basis parameters for both plant and equipment. Any postulated exceedances could easily be accommodated by conservatisms in plant design and construction. Finds. 55-57, 63, 69-76, 78-79, 89, 92, 108, 113.

With regard to the shallow RIS, for which the Board accepts a maximum magnitude of 3.8 M_L, Staff has utilized the envelope of response spectra from data already recorded at Monticello to demonstrate that the ground motion from the maximum magnitude postulated event will exceed Applicants' SSE design response spectra only at frequencies greater than 10 hertz. Finds. 58-61, 64-65, 83-87, 114. For that reason, and based upon empirical observations with regard to epicentral intensities from other shallow earthquakes in the eastern United States, and from observations of damage from other earthquakes, Applicants and Staff have demonstrated that the maximum magnitude shallow earthquake will not damage the nuclear plant structures. Finds. 90-92, 114. However, because some of the safety-related equipment and components have natural frequencies above 10 hertz, and some of the systems and equipment are mounted on or near the foundation slab where they will experience high frequency motions transmitted directly through the slab, Applicants have committed themselves to reviewing the systems and equipment necessary for shutdown and continued heat removal to confirm that explicit safety margins exist for each component. The Board agrees that the review may take into account appropriate reductions of ground motion attributable to the embedment of the foundations in rock and that the Summer plant can commence operations prior to the completion of the confirmatory program. Finds. 93-97, 115. Considering that the evidence adduced failed to establish amplification in the ground motion recordings due to soil, topography or accelerometer pad-soil interaction, the Board will not approve any reliance upon amplification factors in the confirmatory program based upon evidence produced here. Finds. 36-49, 115.

The Board found no evidence to indicate that the Wateree Creek fault poses any danger to the Summer nuclear plant. Finds. 102-105, 116. Nor did it find any evidence that would warrant reexamining the finding of the construction permit Licensing Board that the 1886 Charleston earthquake should be localized to the immediate Charleston area. Finds. 98-101, 117.

In view of the unreliability of the H-M model and the inappropriate application of the Johnson and Traubenik amplification ratios to shallow-earthquake, high-frequency motion, upon which the FSAR and SER relied, the Board agrees with Intervenor's contention that the FSAR was inadequate with respect to the description of seismic activity in the area of the Summer plant site. The Board had not even been notified, until October 20, 1981, of the 0.35g peak horizontal acceleration recorded at the October 1979 event. Find. 25. However, the inadequacies of the FSAR were cured by the extensive evidentiary record of this proceeding.

Historically, the largest magnitude earthquakes from reservoir-induced seismicity have occurred up to 10 years after the reservoir had been filled. In the Piedmont province, Lake Jocasse, South Carolina, experienced its largest earthquake of 3.7 M_L six years after impoundment. Find. 64. Accordingly, the Licensing Board agrees with Intervenor that site seismicity must be monitored at least until the end of 1983, which would be six years after impoundment. At that time, Staff should consider further monitoring as an additional licensing requirement.

The Board concludes that the seismic safety of the Summer Nuclear Plant will be assured if the operating license were made subject to two conditions: (1) that seismic monitoring be continued at least until December 31, 1983, the need for further monitoring to be reevaluated at that time; and (2) that Applicants successfully complete the confirmatory program during the first year of operation to demonstrate that explicit safety margins exist for each component necessary for shutdown and heat removal in the event of the maximum potential shallow earthquake.

III. FINDINGS OF FACT

A. Background and Issues

1. The major seismic issues relate to earthquakes induced by the impoundment of the Monticello reservoir, which was created as part of a planned electric power generating complex. The Monticello reservoir stores water for a pumped storage facility, provides cooling water for the nuclear plant, and serves as a make-up source for emergency cooling water. Stf. Ex. 1 (SER) at 2-21.

2. Filling of the reservoir began on December 3, 1977, and full pond elevation occurred on February 8, 1978. Prior to the filling of the reservoir the USGS seismograph station at Jenkinsville (3 miles east-southeast of the site) had recorded about one local low-level earthquake every six days from 1973 to 1977. After impoundment of the reservoir the number of events had increased to several hundred per week. *Id.* at 2-22; Tr. 1011-12. The largest earthquake at the Monticello reservoir known to NRC Staff at the date of its February 1981 SER was the magnitude (M_L) 2.8 event that occurred on August 27, 1978. The earthquake occurred about a mile northwest of the plant at a depth of approximately 110 meters. Stf. Ex. 1 at 2-27; Tr. 5197-98.

3. A U.S. Geological Survey strong motion accelerometer located about 640 meters southeast of the epicenter and within a mile of the Summer plant produced a strong motion record of the event. The record was significant because the peak horizontal acceleration of 0.25*g* exceeded the maximum horizontal ground acceleration for the safe shutdown earthquake (SSE) of 0.15*g* for rock foundations. This response spectra anchor point of 0.15*g* would be applicable to the main Summer facility which was built on rock. *Id.* at 2-20, 2-27; Tr. 898-901. The SSE peak acceleration for structures founded on soil was 0.25*g*. *Ibid.*

4. In addition to mentioning the actual exceedance of the design basis peak acceleration evident in the strong motion record of the 2.8 M_L event, Staff's SER reflected other concerns. It indicated that there were conflicting estimates of expected magnitudes for future events, as follows: Applicants — 4.0; Staff — 4.5; ACRS — around 5; and differing opinion of Staff seismologist — 5.3. Stf. Ex. 1 at 2-24 to 2-25; Stf. Ex. 1(a) at Appendix D. Higher magnitude earthquakes would be expected to produce higher peak ground accelerations.

5. Intervenor Bursey's original contention, submitted before the Monticello reservoir was filled, referred to the possibility of reservoir-induced seismicity causing magnitude 5.0 earthquakes. Clarification to Petition to Intervene, August 19, 1977, par. 7. As restated in the Board's Prehearing Conference Order of April 24, 1978, the contention read as follows:

> Contention A 4
>
> (a) The FSAR is inadequate with respect to the description of seismic activity in the area of the Summer plant site.
>
> (b) The plans for monitoring site seismicity are inadequate in that they do not consider the seismic effect of filling a reservoir. Site seismicity should be monitored for one year subsequent to filling the reservoir and prior to granting of the operating license.

6. At the final prehearing conference held on April 7 and 8, 1981, Intervenor Bursey submitted his summary of contentions in which he contended that a near-field magnitude of 5.3 should be used for assessing seismic safety. He also referred to the recently discovered Wateree Creek fault near the reactor as posing

new seismic considerations that must be resolved prior to licensing. Inter. Summary of Contentions at 3-4. The Wateree Creek fault had been mapped and reported in 1980 and was the subject of some discussion in the February, 1981 SER, including a possibility of some association of the fault with the reservoir-induced seismicity (RIS). Stf. Ex. 1 at 2-19 to 2-20, 2-26 to 2-27. In addition to the RIS and the Wateree Creek fault, the SER also discussed the Charleston earthquake of 1886 which had been localized to the immediate Charleston area at the construction permit stage and was not assumed to migrate outside of that region for determining ground motion at the Summer site. *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Unit 1), LBP-73-11, 6 AEC 213, 218 (1973). The February, 1981 operating license SER reexamined the evidence with regard to localizing the 1886 event to the immediate Charleston area and reaffirmed the construction permit conclusion.

7. In our Order following the final prehearing conference (at 4-6), the Board permitted a "broadening" of Intervenor's restated contention in view of the changed situation (*i.e.*, the newly created RIS and the discovery of the Wateree Creek fault) since the contention was adopted, as discussed in the SER. We broadened the seismic contention to include all of the seismic considerations covered in the SER and extended the period during which Intervenor claimed the monitoring of seismicity should be continued until the end of 1983.

B. Applicants' Use of the Brune Model

8. In its submittals to Staff and its presentation to the Licensing Board at the initial hearings on seismicity held June 22-24, 1981, Applicants relied primarily upon a model by Professor James Brune of the University of California at San Diego to predict a maximum magnitude earthquake at the site of $M_L = 4.0$. Applicants also used the Brune model to determine peak acceleration. This model depends on estimates of stress drop, seismic moment, shear wave velocity, density and attenuation. Stf. Ex. 1 at 2-24, 2-30; Tr. 861. One of the critical parameters used by Applicants in applying the Brune model was a maximum assumed stress drop of 25 bars, based upon a calculation by Fletcher of the USGS that the maximum stress drop for the August 1978 earthquake was 17 bars. Another critical parameter was the assumed maximum dimension of geological structures within the immediate vicinity of the reservoir, assumed to be 1 km or less. Stf. Ex. 1 at 2-24 to 2-25; Stf. Ex. 2.

9. Staff's consultant from the LASL, Dr. Karl Newton, and the Advisory Committee on Reactor Safeguards, independently of the Brune model, estimated the maximum reservoir-induced earthquake at Monticello to be M_L 4.5 and around 5, respectively. Stf. Ex. 1 at 2-24; Stf. Ex. 1a at D. Applying the Brune model, but using inputs of a stress drop of 100 bars and a source dimension of 3.2 km (length of the clusters of seismic activity), Dr. Andrew Murphy of the NRC Office of

Nuclear Regulatory Research arrived at a possible event of magnitude 5.3 M_L in the immediate vicinity of the reservoir. Stf. Ex. 1 at 2-24 to 2-25.

10. Because there are so few near-field ground motion data containing peak accelerations, the applicants used the Brune model as a basis for their theoretical calculations for the $M_L = 4.0$ maximum earthquake they predicted and for the larger magnitude earthquakes predicted by Staff and the ACRS. Since the Brune model is a far-field model, the Applicants used an extension of this model proposed by Hanks and McGuire (H-M model) to adjust it to the near field. Staff updated testimony, ff. 5758, at 28-29, 42. Using a stress drop of 25 bars, Applicants determined zero-period acceleration (ZPA) values of 0.14*g* for an $M_L = 4.0$ event at a source distance 2.0 km; of 0.22*g* for a $M_L = 4.5$ event at 2.0 km; of 0.20*g* for a $M_L = 5.0$ event at 3.0 km; and 0.22*g* for a 5.5 M_L event at 4.0 km. The increase in source distance with increase in assumed magnitude was attributable to the assumption that a higher magnitude earthquake would require a larger source dimension and hence would occur deeper and farther from the plant site. Appl. Ex. 2, 3, 4; Tr. 1138.

11. Even though the 0.22*g* ZPA exceeded the design basis acceleration of 0.15*g* for the Summer plant built on rock, Applicants attempted to demonstrate that the use of a 0.22*g* acceleration used as an anchor point to appropriate response spectra would not exceed the original safe shutdown earthquake spectra anchored to 0.15*g*. Applicants derived response spectra from the Hanks and McGuire model estimate of peak acceleration using amplification ratios determined by Johnson and Traubenik to estimate peak velocity and peak displacement. Johnson and Traubenik had examined records in the M_L range of 4.7 to 6.5 recorded at rock sites at distances of 2 to 7 km from earthquake faulting and had derived amplification ratios at close distances as a function of magnitude. The Applicants considered these preferable to the Regulatory Guide 1.60 spectrum which is derived from a composite of strong motion records recorded mostly from earthquakes greater than $M_L = 6.0$ and at different distances out to 100 km. The Regulatory Guide 1.60 spectrum does not attempt to differentiate between site conditions, different magnitudes or distance ranges. Stf. Ex. 1 at 2-30; Stf. Suppl. Testimony, ff. 5758, at 34; RM-1, ff. Tr. 5042. Regulatory Guide 1.60 itself (at footnote 2) indicates that it does not apply to sites which 1) are relatively close to the epicenter of an expected earthquake or 2) which have physical characteristics that could significantly affect the spectral combination of input motion.

12. Applicants' original SSE design spectrum anchored at 0.15*g* was derived from studies by Newmark and Hall and differed slightly from the response spectra in Regulatory Guide 1.60. Tr. 879-880; Stf. Ex. 1 at 2-20. A 2% damping value was used. As a result of the reservoir-induced seismicity, a comparison was made between the new spectra based upon the amplification values of Johnson and Traubenik for 5 to 7% of critical damping, with the original design spectrum for 2% damping. It was found that the 2% SSE spectrum was exceeded only in the

frequency range greater than 9 hertz. Chen, ff. Tr. 5324, at 5-6; Stf. Ex. 1a at 3-2. Subsequent to the original analysis, Regulatory Guide 1.61 was issued. It allows a 5% damping value for prestressed concrete and a 7% value for reinforced concrete structures in the seismic analysis. *Ibid.*

13. The internal concrete structures have fundamental frequencies higher than 9 hertz, which is in the frequency range where the original design spectrum falls below the new spectra values. For this reason, the Applicants generated a new time history input motion using the Oroville, California earthquake as a basis, and scaled that up to a 0.22*g* peak value. It was found that the new floor response spectra based on the adjusted Oroville earthquake time history did not exceed corresponding floor response spectra for the facility design. Similar comparisons were made for equipment and systems, and demonstrated that the new spectra were bounded by the original design spectra except in some cases in the 20-30 hertz range. The exceedances in this frequency range were then found acceptable on the basis of certain built-in conservatisms used in the facility design. *Ibid.*

14. Dr. Andrew Murphy of the NRC Staff differed with the Applicants' and official Staff positions on the magnitude of the maximum reservoir-induced earthquake at the Monticello reservoir. Although he did not personally consider the Brune model to be as reliable as other models that could be used for determining a maximum magnitude reservoir-induced earthquake, he used the Brune model for his calculations. His differences with the Applicants related to their use of a 1 km source dimension and 25 bars of stress drop. He explained that the use of 25 bars of stress drop in Applicants' calculations was justified on the basis of a 17-bar stress drop calculation for the August 27, 1978 earthquake by a member of the USGS who had apparently updated his results to show that the stress drop was about 17 bars on one horizontal axis and around 90 bars on the other horizontal axis. He also relied upon the length of the clusters of seismic activity of 3.2 km as a source dimension. Using 100 bars as a stress drop (to conservatively reflect the range of 17 to 90 bars calculated for the August 1978 event) and the 3.2 km source dimension, he arrived at a magnitude (M_L) 5.3 event as possible in the immediate vicinity of the reservoir. Stf. Ex. 1 at 2-24 to 2-25; Stf. Ex. 2; Tr. 1063-65, 1205.

15. At the opening seismic hearings held from June 22-24, 1981, the Licensing Board examined Applicants' and Staff witnesses in depth concerning the use of the Brune model and the critical parameter of 25 bars of stress drop used in Applicants' calculations. In particular, some of the Board questions were very critical with regard to: Applicants' maintaining a constant stress drop with an increase in magnitude; the historical observations that might support the 25-bar figure; the lack of correlation of the 25-bar figure with the higher deviatoric stress observed in the boreholes at the Summer site; the possibility of variability of stress drop with location at the Summer site; the Staff's basis in the literature and historical observations for accepting a constant of stress drop throughout a range of magnitude; the variability of the stress drop in relation to a change in source

diameter; and the representative nature of the Brune model for use in the eastern United States in view of the reliance upon empirical data from California to China. Tr. 861-77, 933-37, 940-46, 971-74, 1004-07, 1018-19, 1122-34, 1136-37, 1186-90, 1207-13, 1221-22.

16. The maximum ZPA of 0.22g arrived at through the H-M adaptation of the Brune model had already been exceeded at the strong motion accelerometer, which had recorded ground motion of 0.25g during a 2.8 M_L event on August 27, 1978. Applicants attributed that reading to amplification of motion in the 56-foot soil column underneath the strong motion accelerometer. Applicants used deconvolution procedures to infer ground motion at bedrock of about ½ the value of the motion recorded at the surface. Their deconvoluted motion estimate of 0.130g and 0.106g for the two horizontal components for the August 27, 1978 event was found by Staff to compare well with a peak acceleration of 0.121g calculated for a similar magnitude event under the H-M model using a stress drop of 25 bars at a source-to-site distance of 1 km. Stf. Ex. 1 at 2-28, 2-30; Tr. 1157.

17. Although Staff used methods other than the Brune model to calculate a maximum magnitude earthquake (and arrived at a 4.5 M_L compared to Applicants' 4.0 M_L), it relied exclusively on Applicants' application of the H-M model to determine peak ground acceleration. Furthermore, it concluded that Applicants had demonstrated that the ground motion was amplified in the soil column at the strong motion accelerometer site. Stf. Ex. 1 at 2-27 to 2-31; Stf. Ex. 1 at 2-27 to 2-31; Stf. Ex. 1(a) at 3-2.

18. During the opening seismic sessions, the Licensing Board questioned Applicants' and Staff's witnesses with regard to this area. We questioned critically the ground motion figures actually recorded near the site (Tr. 757-63), and the basis for Staff's acceptance of Applicants' theory that there had been an amplification of ground motion from bedrock to the Jenkinsville accelerometer because of soil and topographical characteristics (Tr. 1141-46).

19. Applicants presented most of their case on seismicity, and Staff presented and concluded its seismic presentation during the week of June 22, 1981. During the week of July 6, 1981 when the hearing was not in session, the Board informed the parties during a conference call that it intended to call independent experts as Board witnesses. At the hearing the following week, the Board confirmed this course of action. Tr. 2512. In response to a Staff request, the Board Chairman identified four areas of specific concern to him: 1) whether "the [g] values suggested for the different magnitudes have been fully substantiated by the testimony"; 2) whether "the application of those time histories pegged to these [g] values had been fully substantiated"; 3) whether there has been a "full enough discourse on the accelerometer readings at Jenkinsville"; and 4) "whether the Charleston earthquake ought to be migrated to the periphery of the Coastal province or the edge of the Piedmont province." Tr. 2514-15.

20. Several days later, the Licensing Board discussed these concerns further. Tr. 3790-3817. It focused on three principal issues: 1) the *g* values for ground acceleration, 2) the application of response spectra, and 3) earthquake magnitudes. Tr. 3790. The major portion of the Board's concern related to Staff's acceptance of Applicants' use of the Hanks and McGuire adaptation of the Brune model to determine the *g* values. We questioned whether Staff's review of Applicants' use of this model had been sufficiently critical with regard to whether that model was an appropriate one to use, and whether the proper values had been used as inputs in applying that model. Tr. 3790-93. The Board questioned the exclusive use of the Brune model to determine the appropriate *g* values and whether the information used in the calculation (*i.e.*, stress drop, source diameter, etc.) was the "best kind of information to look at." Tr. 3793. The Board also indicated that it expected the independent Board witnesses to update the strong motion figures at the Summer site by at least consulting with "the person who was responsible for the accelerometers at Jenkinsville." Tr. 3799.

21. As to the issue of migrating the Charleston earthquake to the perimeter of the Piedmont province, the Board indicated that it was in basic agreement with the argument of Applicants' counsel (given at Tr. 2520-21) that this issue was resolved at the construction permit stage and would only become a question for the operating license proceeding if there were "any drastic change in the information since then." Tr. 3798. We did not see that matter as a "critical issue in the case." *Ibid.* As we find below, although the experts might differ on localizing a repetition of the 1886 earthquake to the immediate Charleston area, there has been no drastic change in information available to this Board over what was considered during the construction permit stage that would justify reopening the issue.

22. On August 7, 1981, Staff filed a petition for directed certification seeking to restrain the Licensing Board from calling Board witnesses without first affording the Staff the opportunity to respond to the Board's concerns. Subsequently, Staff informed the Appeal Board that it would file supplemental testimony addressing these concerns on or about September 15, 1981. On August 27, 1981, the Appeal Board issued a memorandum indicating that it expected the Licensing Board to review Staff's supplemental testimony when received, and, that if the Licensing Board were still of the view that it could not resolve the seismic issue on the basis of the evidence adduced by the parties themselves, to provide the Appeal Board with its reasons.

23. On September 15, 1981, Staff filed its supplemental seismic testimony. It reviewed Applicants' ground motion model (the H-M adaptation of the Brune model, together with the Johnson and Traubenik amplification ratios) and the input parameters for the model and found it reasonable for Applicants to use this model to predict near-field ground motions. Supplemental testimony at 33. Staff indicated that the most important parameters in Applicants' model were stress drop and source dimension. It found that Applicants' choice of 25 bars of stress drop

was conservative and that the source dimensions used in the model were reasonable. *Id.* at 24, 33.

24. On October 15, 1981, the Licensing Board issued a memorandum and order, LBP-81-47, 14 NRC 865, reaffirming its intention of calling seismology experts as Board witnesses. On October 19, 1981, the Appeal Board denied Staff's petition for directed certification thereby permitting the Licensing Board to proceed with calling its own expert witnesses at a further hearing on the seismic issues.

25. On October 20, 1981, Staff notified the Licensing Board by Board Notification (BN-81-32) of a significant earthquake that had occurred on October 16, 1979 that had not been reported to the Board. The accelerometer data from that event indicated that there had been peak accelerations recorded of 0.35*g*, 0.36*g* and 0.18*g* for the two horizontal and one vertical components, respectively, dwarfing the 0.25*g* recording of the August 27, 1978 earthquake.

26. In its October 15, 1981 Memorandum and Order, LBP-81-47, *supra*, the Licensing Board had also ordered that Staff file further written testimony, to be presented at further hearing, responding in full to the Board experts' reports which had been received in September of 1981. Because of the "new" seismic information contained in the Board notification of October 20, 1981, and the pendency of certain soil tests being conducted by Applicants to determine the extent of any amplification in the Jenkinsville accelerometer recordings due to the location of that accelerometer, the Staff's time for filing the further testimony was extended until December 31, 1981. The testimony was filed on that date and was subsequently received in evidence at the further seismic hearings held January 11-16, 1982, following Tr. 5758.

27. In its updated supplemental testimony on seismicity, Staff reexamined its acceptance of Applicants' choice of 25 bars as the appropriate stress drop in the H-M adaptation of the Brune model. It based its reexamination upon new information available to it. The most important of the new information was the calculation made by Applicants of the average rms stress drops for the six events recorded at Monticello which had significant ground motion. The Staff recalculated Applicants' stress drop figures to eliminate Applicants' reduction factor for soil amplification and arrived at stress drops for the six events of approximately 12, 19, 23, 42,[7] 7 and 48 bars. Staff concluded that 50 bars is the appropriate rms stress drop to use in conjunction with the H-M application of the Brune model. Staff updated testimony, ff. 5758, at 32-34. Staff also indicated that, because of the lack

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[7] Staff erred in its recalculation of an October 27, 1978 event of $M_l = 2.4$ and should have arrived at a figure of 46 bars, rather than 42 bars. See Appl. Ex. 43 at 5, Table 4. Applicants had earlier calculated a stress drop of 65 bars for that event. McGuire's Evaluation of Joyner-Fletcher Report, ff. Tr. 5075, at Table 1. Presumably under the Joyner-Fletcher method of calculating stress drop, the figure would be even higher than 65 bars.

of data and understanding associated with eastern U.S. earthquakes, it becomes "problematic" to determine the values for stress drop, or even to assume a constancy with increasing magnitude, for stress drop in the eastern U.S. and, in particular, for eastern RIS. *Id.* at 30-31.

28. In its updated supplemental testimony, Staff concluded that Applicants' model is physically reasonable but needs to be treated with caution and, when possible, should be used in conjunction with other approaches. *Id.* at 35. At the further hearing, however, Staff's main seismology witness, Dr. Leon Reiter, retreated considerably from any reliance upon Applicants' model. After hearing the bulk of the testimony, he concluded that it was not possible to come to any definitive results using Applicants' model or to determine which parameters (*i.e.*, which values of stress drop and source diameter) are to be used in applying the model. He recommended that the Board look at other approaches. Tr. 5804.

29. Board witness Dr. William Joyner testified that he and his USGS colleague, Dr. Fletcher, had calculated average rms stress drops for the August 1978 event of 32 and 25 bars (for the two horizontal components) and for the October 1979 event an average of 60 bars. Joyner summary, ff. Tr. 4696, at 3; Tr. 4824. Board witness Dr. Enrique Luco calculated a stress drop from the August 1978 event of 100 bars. Tr. 4730; Luco report, ff. 4731, at 4-5. He believed that Applicants had used erroneous formulas in arriving at their figures. He repeated the Joyner and Fletcher calculation of stress drop for the October 1979 event and arrived at over 60 bars.* Tr. 4966-67, 4978. Even Applicants' chief seismology witness, Dr. Robin McGuire, an architect of the H-M adaptation of the Brune model, testified that, if soil amplification factors are not taken into account, the stress drop for the August 1978 event would be on the order of 25 bars and, for the October 1979 earthquake, on the order of 50 or 60 bars. He also calculated a stress drop of 65 bars for an October 27, 1978 event. Moreover, he estimated uncertainties in calculating stress drops even in California where stress drops are relatively stable, as being on the order of a factor of 2, plus or minus 1 standard deviation. Tr. 5559-60; McGuire's Evaluation of Joyner-Fletcher Report, ff. 5075, at Table 1. If stress drop is increased by a factor of 2 in Applicants' model, the resultant acceleration would be doubled. Tr. 5922.

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* The Joyner-Fletcher-Luco calculation of stress drop of between 60 and 65 bars for the October 1979 event, which was essentially unchallenged by Applicants, was based upon a moment magnitude calculation. Tr. 4815. If that moment magnitude stress drop calculation were converted to a local magnitude (M_L) calculation, as Staff converted Applicants' original stress drop figure, the resulting stress drop would be approximately 85 bars for that event of $M_L = 2.8$ and moment magnitude = 3.1. See Appl. Ex. 43 at Tables 3, 4. In the Board's opinion, it would make more sense to use a moment magnitude stress drop in a calculation based upon seismic moment. Staff's decision to use an M_L calculation was undoubtedly attributable (perhaps unnecessarily) to the definition in Appendix A to Part 100 of "magnitude" as meaning the numerical value on a Richter scale. Local magnitude (M_L) is a Richter scale; moment magnitude is not. We do not interpret that definition as requiring that every calculation must be based upon a Richter scale, although Staff may be justified in converting to Richter units early in the calculation for the sake of accuracy.

30. In the original seismic hearing Applicants' witness Dr. Alexander testified that the maximum deviatoric stress observed in two boreholes at the Summer site was on the order of 100 bars, that the average stress drop that might be released in an earthquake would be in the range of 20%, and that therefore a release of 20 to 25 bars could be expected. Tr. 991-92. At the further hearing in January, 1982, that same witness testified that, in a situation such as at the Monticello reservoir where the pore pressures are high because of the reservoir, all of the deviatoric stress (on the order of 100 bars in some locations) could be released during an earthquake. Tr. 5097-99, 5108.

31. At the original hearing, Applicants offered evidence that there is no general increase of stress drop with magnitude, at least over a range of 2 or 3 magnitude units. Appl. Ex. 4 at 4. This assumption, that stress drop remains fairly constant over a range of magnitudes, was a critical factor in Staff's acceptance of Applicants' model. Tr. 1127-31, 1221-22. At the further hearing in January, 1982, it was disclosed that Applicants' major witness on eastern United States earthquakes, Dr. Otto Nuttli, had concluded that in the east, in contrast to the west, stress drop will increase with magnitude. Staff updated testimony, ff. 5758, at 33. Other seismologists have shown that even in California, where stress drop is relatively constant, stress drop in the Mammoth Lakes region increases steadily with magnitude for magnitudes less than about 3.4, although it is fairly constant for larger earthquakes. *Ibid.*

32. The H-M adaptation of the Brune model is based upon observations of California earthquakes. Hanks and McGuire have found that their equation for peak acceleration gives adequate results in California if a constant stress drop of 100 bars is used, regardless of the actual stress drop measured or calculated for that event. Staff updated testimony, ff. 5758, at 29; Luco report, ff. 4731, at 2.

33. Based on the foregoing paragraphs, the Board finds that the H-M adaptation of the Brune model cannot be relied upon to predict peak accelerations from future events at the Monticello reservoir. On the basis of the evidence adduced, one cannot even determine rms stress drop, appropriate for ground motion calculations, for the two most significant events that had occurred at the Monticello reservoir, the August 1978 and October 1979 earthquakes. The estimates for these two events range from 17 bars to 100 bars. Our best estimate of the rms stress drop would be in the range of 25 to 30 bars for the August 1978 event and from 60 to 65 bars for the October 1979 event, both of which were at an estimated magnitude of $M_l = 2.8$. We estimate an rms stress drop for an October 27, 1978 event of between 50 and 65 bars where the magnitude was estimated at $M_l = 2.4$. Because of the evidence that stress drop in the eastern United States generally increases with magnitude and that even in some California areas it increases with magnitude below magnitude 3.4, we cannot even accept the 60-65 bar range of the October 1978 and October 1979 events as a conservative figure for higher magnitude shallow events at the Monticello reservoir. We would also have to consider the

possibility of a 100-bar stress drop if we were to rely upon the H-M model, which we expressly decline to do.

34. With regard to Applicants' use of the Brune model to estimate maximum magnitudes in which Applicants used a source dimension of 1.0 km, questions posed by the Board's experts failed to reveal any support in the literature or engineering practice for the quantitative limit of 1 km at the Monticello reservoir, or for using the Brune model to determine the largest seismic event that could occur at a site on which to base an engineering judgment. Furthermore, Applicants' main expert in this area, Dr. Sheldon Alexander, conceded that once a rupture had begun the fracture could propagate beyond the stress field into a stress-free region to, perhaps, double the rupture radius. Nor could he even rule out the possibility of rupture on multiple fault planes in a single earthquake event (such as en echelon faulting), that would permit a release of higher energy (and hence result in a higher magnitude earthquake) within the limited source dimension. Tr. 5101-15. Moreover, the *in situ* stress measurements and 1 km source dimension used to apply the Brune model to determine maximum magnitude, were based upon measurements in two boreholes that were 700 meters and 900 meters deep. There was no way of knowing what was below those holes or anywhere else in the vicinity of the site. Tr. 5904.

35. In its SER and at the opening seismic hearings, Staff did not question Applicants' use of ground motion ratios of Johnson and Traubenik to construct response spectra anchored to the peak acceleration values determined from the H-M application of the Brune model. See Stf. Ex. 1 at 2-30. These Johnson and Traubenik amplification values are lower than those used in Regulatory Guide 1.60. Tr. 5599. At the further hearing held in January of 1982, Staff expressed considerable reservations about the Johnson and Traubenik amplification ratios. Because they were derived from records in the M_L range of 4.7 to 6.5, at epicentral distances of from 2 to 17 km, and were filtered at 20 hertz to exclude higher frequencies, Staff questioned whether they were applicable to high frequencies generated within several kilometers of the source. Staff concluded that for small magnitudes and for distances within several kilometers, the Johnson and Traubenik amplification factors are not tested and do not take into account high frequencies (20 hertz or more). Staff updated testimony, ff. Tr. 5758, at 34-35. The Board agrees with Staff (*id.* at 41-42) that, in view of the high frequency motion, low magnitudes (less than the lowest magnitude earthquakes taken into account by Johnson and Traubenik), and small hypocentral and epicentral distances anticipated, the Johnson and Traubenik amplification ratios are inappropriate for the shallow RIS expected at Monticello reservoir.

C. Amplification of Ground Motion

36. In its submittals to Staff and at the original hearing, Applicants argued that the peak acceleration at the Monticello reservoir known at that time, of 0.25g for the August 27, 1978 event, had been amplified in the 56-foot soil column below the strong motion accelerometer. Staff found that the Applicants had demonstrated that ground motion had been amplified in the soil column and that such amplification would not occur at the plant site, where most of the foundations are on bedrock. Stf. Ex. 1 at 2-28 to 2-29; Tr: 760-64. Prior to the further hearings held in January of 1982, Applicants conducted theoretical studies and field tests to determine whether there had been ground motion amplification at the USGS strong-motion accelerometer location for the peak instrumental accelerations of 0.25g and 0.35g for the August 1978 and October 1979 events. The purpose of these studies was to see the effect of the soil on the records obtained at the dam abutment, not to input something into the plant. Tr. 5576.

37. Applicants conducted a theoretical soil modelling study to demonstrate the ground motion amplification at the accelerometer site. The primary concern was whether the surface motion had been amplified as it propagated from the underlying bedrock. If amplification occurred, peak accelerations within bedrock would be less than recorded at the instrument location. Martin testimony, ff. Tr. 5522, at 1.

38. Applicants' expert performing the analyses, Dr. Geoffrey Martin, concluded that all cases have amplification ratios greater than 1.0, and that they range from 1.4 to 2.9. *Id.* at 11. Somewhat inconsistently, he further concluded that the amplification ratio at high frequencies (*i.e.*, the frequencies at which peak accelerations were recorded for the August 1978 and October 1979 events) is approximately 1.0. *Id.* at 13-14. He further testified that with regard to earthquakes such as occurred at the Monticello reservoir, at the peak accelerations in the 20 to 25 hertz range, there would be no significant amplification. Tr. 5538-41, 5569-74. Later, Dr. Martin admitted in response to questions posed by Board witness Trifunac that, for the models used in the soil study at greater than 20 hertz, the function would be less than 1, indicating that there could have been deamplification in the Monticello readings from bedrock to the accelerometer. Tr. 5667-70. Dr. Trifunac testified that the results of that study could be used to support the position that ground motion in the 20 to 35 hertz range could have been deamplified by a factor of 2 in the strong motion recordings at Monticello, although he (Dr. Trifunac) was not in favor of any reliance upon that study. Tr. 5671-73, 5675.

39. The event that was modelled by Dr. Martin was not similar to the events that had occurred at Monticello. Rather, it was a representation of a generic event of magnitude 4.0 with a hypocentral distance of 3 km, at a depth of 2 km. Since there was no 4.0 magnitude event at 3 km available, Dr. Martin scaled an Oroville

1975 aftershock with a magnitude of 4.6 and a 15 km hypocentral distance. This Oroville earthquake had a dominant frequency band in the range of around 10 hertz, in contrast to the 20 to 25 hertz dominant frequency band for the Monticello earthquakes. Dr. Martin admitted that the earthquake modelled was not representative of Monticello and that any amplification effect for the peak accelerations at the August 1978 Monticello event from the soil column was not significant. Tr. 5532, 5535-36, 5668-70.

40. Applicants' soil modelling study was based upon a program originally developed by Board witness Dr. William Joyner. Testimony of Martin, ff. 5522, at 4. At the beginning of the hearing session in January of 1982, Dr. Joyner tentatively accepted Applicant's amplification factor of 2. Tr. 4702-03, 4713-14. However, he requested additional information from Dr. Martin to reach a final conclusion. Tr. 4769-72. Upon receiving that information, Dr. Joyner concluded that he could not accept any amplification factor based on Applicants' model. He explained that because the events were shallow the seismic ray from the focus of the earthquake to the instrument site would be almost horizontal and would not likely be amplified. Tr. 4980, 5386-88, 5399-5404, 5662-63, 5731-32. He indicated that the other Board witnesses (Drs. Luco and Trifunac) and the Staff did not accept the amplification in the first place. Tr. 5391-93, 5731-32. The Board agrees with Dr. Joyner that the soil modelling study has not demonstrated that any amplification due to the soil column was involved in the August 1978 and October 1979 records of ground motion at the dam abutment site.

41. All of the witnesses, including Applicants' witnesses, have agreed that no significant amplification because of topographic effect was present in the Monticello records. Tr. 4713, 5493, 5514, 5525, 5540.

42. On January 8, 1982, three days before the final sessions on seismicity were scheduled to begin Applicants conducted so-called "plucking tests" on the concrete pad on which the Monticello accelerometer that had recorded the high ground motion was placed. The purpose of the tests was to demonstrate that the high ground motion, since not attributable to soil or topographical amplification, was attributable to amplification due to a correspondence of the natural frequencies of the soil-pad system with the dominant frequencies of the peak accelerations for the 1978 and 1979 events (in the frequency ranges of 20-25 hertz for peak accelerations and 10 to 15 hertz for peak velocities). The person who purportedly conducted the tests, Dr. Richard Woods, was not present to testify; nor was anyone who was present during the testing. Neither the NRC Staff nor intervenor was notified that the tests were to be conducted. Appendix to Martin testimony, ff. 5522; Tr. 5541-45.

43. The tests consisted of fastening a rope around the 4-ft. × 4-ft. × 1-ft. concrete pad, with the free end attached to the rear axle of a vehicle. The rope was then tensioned and severed by an axe striking an underlying log positioned close to the pad. This set the pad into free vibration. The horizontal and vertical velocity

traces of the vibration were recorded by geophones positioned on the pad. The tests were purportedly carried out with the rope aligned along both principal axes of the pad and were performed in each direction to insure that the results were repeatable. Appendix to Martin testimony, ff. 5522, at 2-3; 5546.

44. In order to describe motion adequately, six measurements of the motion are necessary: rocking in two directions, sliding in two directions, up and down and twisting motions. Here, only two modes were measured, rocking and vertical, and Applicants were not able to say which mode was which. The exact resolution of frequency values was difficult, particularly the high values at which the peak accelerations for the 1978 and 1979 events had been recorded (because of the small scale of the instruments), so that only average values were computed from the record analysis. Because the stiffness was different in the two directions, Applicants had to make "idealized calculations". Furthermore, because of the apparently anomalous readings for the two modes that were suspected, Applicants were somewhat confused by what might have been going on in that soil-pad system. *Ibid.*; Tr. 5548-49, 5565-68.

45. None of the Board or Staff witnesses would attribute any degree of confidence to the results of the plucking tests. Tr. 5567, 5568-69, 5601-03, 5679, 5812-13, 5818, 5819-20, 5841, 5850, 5854, 5983. The Board indicated that it could give no weight to the results of the tests because of their inherent deficiencies, as discussed above. It suggested that, if Applicants wanted to take credit for those tests, they re-run the tests in the presence of Staff experts who would also supply some input into the testing procedure. Staff indicated its availability for any re-testing of the soil-pad interaction. Applicants, however, indicated that it would inform the Board by conference call during the next week as to whether they wished to re-run the tests so that the Board could put some weight on the results. Tr. 5980-87, 5992. At a conference call the next week, Applicants informed the Board and the parties that they did not wish to re-run the tests. The Board gives no weight to the results of the pad tests.

46. In October 1981, the Applicants conducted two explosion tests near the V. C. Summer Nuclear Station. The purpose of the experiment was to acquire data for a comparative study of ground motion at the USGS accelerograph site and at additional instrument sites in the free-field and on building foundations. In the frequency band from 5 to 50 hertz, amplitudes of ground motion on saprolite soil were found to be twice those recorded on the foundation of massive structures on bedrock. Somerville testimony, ff. Tr. 5169, at 1. The field experiment suggests that accelerogram records from the USGS SMA-1 on the dam abutment may not be representative of foundation motions on bedrock, and must be modified accordingly in assessing the effects of RIS on massive embedded structures founded on rock. Tr. 5496-98.

47. The observed differences between the foundation and free-field motions were probably attributable to several effects which cannot be determined in-

dividually from this experiment. Because of the absence of rock outcrops in the site vicinity, it was not possible to obtain free-field records on rock and thereby isolate any effects that might have been due to the saprolite layer. Other possible effects are that, due to the presence of massive concrete structures on large, deeply embedded foundations, foundation motion might differ from free-field motion because of elastic wave incoherence, elastic wave scattering, foundation embedment, inertial resonance of the building mass, and energy transmission between the ground and the structure. These individual effects cannot be separated using the field test data. Somerville testimony, ff. Tr. 5169, at 6-7; Tr. 5496, 5630.

48. Board witness Dr. Joyner felt that the blast test information was not significant because the modes of propagation of ground motion are different from the explosive sources than they are from earthquake sources. Tr. 4713, 4769, 5402-04, 5723-25. Board witness Dr. Luco believed that there could be a reduction of ground motion to the building foundations on rock due to a scattering of the waves and a rigidity of the foundations. He was not convinced that the calculation performed by the Applicants reflected this effect but agreed that the reductions observed for the explosion cases give an indication that the reduction was taking place. He thought that for seismic excitation, reduction factors might be different from those observed in the experiments, but that some reductions are possible and can be calculated, and that a complete soil structure interaction analysis of the scattering of waves by the embedded foundation would disclose those reduction factors. Tr. 5526, 5596-97, 5600-01, 5609. Board witness Dr. Trifunac was also critical of relying upon the blast test information to establish amplification or reduction of ground motion, although most of his criticism was concerned with applying the results of the shallow explosion tests to the case of deeper earthquakes. Tr. 4707-09, 5204-07, 5670-71, 5716, 5821-22. Staff concluded that although the Applicants had performed a great deal of work in a relatively short period of time and that the analyses of blast test data demonstrated a trend toward significant reductions, it did not feel that the Applicants' results were conclusive in a quantitative sense so as to define the final magnitude of reduction. It could not accept Applicants' factor of reduction of 0.5 on the basis of the blast test data, but looked towards a definition of the reduction factors to be employed on the basis of further studies under a confirmatory program already underway. Staff's updated testimony, ff. 5758, at 4, 66.

49. The Board finds that none of Applicants' studies, the soil modelling study, the blast test study, or the pad plucking tests study, have demonstrated that there was any amplification in the Monticello ground motion records. The Board finds further that it is unlikely that there was significant amplification in those records due to soil, topography or accelerometer pad-soil interaction effects. The Board, however, finds that it is likely that there would be a significant reduction in ground motion from the free-field to the foundations of the Summer nuclear buildings because of the embedment of those structures on rock, especially in the high

frequency range, as suggested by Dr. Luco (Tr. 5600-01, 5609), and that appropriate reduction factors can be determined through the confirmatory tests now underway.

D. Maximum Magnitude

50. Applicants submitted that $M_L = 4.0$ is the appropriate maximum magnitude event that can be induced by the Monticello reservoir. Alexander testimony, ff. Tr. 5028, at 12; Tr. 5011. Several lines of evidence were presented in support of this conclusion.

51. First, historic experience both locally and within the Piedmont province was cited. Dr. Alexander testified that no reservoir not associated with active fault zones has produced significantly large earthquakes. Tr. 5011. In the Monticello region of the Piedmont province, all events thought to be induced by reservoirs have been less than $M_L = 4.0$ with a single exception. That exception, the Clark Hill event with $M_L = 4.3$, was said to be "of questionable association with the reservoir itself" because it occurred long after reservoir impoundment and because other comparable events had occurred in that region prior to impoundment. Tr. 5011-12. The data base for this conclusion that RIS events in the Piedmont province are less than $M_L = 4.0$ consisted of 59 reservoirs of similar size to Monticello representing about 2200 years of reservoir operation. McWhorter testimony, ff. Tr. 5031, at 1-2; Tr. 5029.

52. Second, several types of site-specific evidence were said to support the $M_L = 4.0$ for RIS conclusion. The spatial extent of RIS at Monticello is confined laterally to the immediate area of the reservoir and vertically to a depth of less than 3 km. In fact, with respect to the vertical aspect, Dr. Alexander testified that over 98% of the events were shallower than 2 km and approximately 80% shallower than 1 km. Tr. 5012. These bounds were reached quickly (within 1½ years) and have not expanded since that time. Tr. 5012-13. Only microearthquakes (less than $M_L = 3.0$) have occurred since impoundment and their average rate of occurrence has been steadily declining with time. Tr. 5013. The shape of the observed frequency versus magnitude curve is consistent with a limiting magnitude. Tr. 5013. And, finally, heterogeneities in rock properties which have been documented were said to limit the extent of any single fault movement to a distance estimated to be 1 km. Tr. 5014. Recorded stress levels at Monticello were also said to be not sufficiently high to allow extensive ruptures to occur very deep. Tr. 5019.

53. Applicants' consultants also examined worldwide reservoir-induced seismicity to evaluate the conclusion that the maximum RIS event at Monticello would be $M_L = 4.0$. That examination showed that out of 64 confirmed cases of worldwide reservoir-induced seismicity, only 11 had induced events of magnitude 5 or greater. Of those 11 cases, 9 were associated with active faulting and the other 2 were most likely associated with active faulting. Tr. 5029. With the possible

exception of the New Madrid, Missouri earthquakes in 1811 and 1812, there have been no observations of surface rupture occurring in the eastern United States. Nuttli testimony, ff. Tr. 5164, at 5. No active faulting exists at the Summer site. Applicants' experts drew a conclusion from this comparison that "for reservoirs in intraplate tectonic settings away from active tectonic elements, a maximum magnitude of about 4 appears to be appropriate." Tr. 5030.

54. Applicants further argued that the shallow depth of the reservoir-induced seismicity at Monticello reservoir is an important factor limiting the maximum magnitude of such events. Approximately 98% of the events have been less than 2 km deep. Experience from earthquakes throughout the entire central and eastern United States suggests that magnitude 4 is the upper limit for such shallow earthquakes. Nuttli testimony, ff. Tr. 5164, at 4; Tr. 5173, 5175.

55. The Staff position in the SER was that the maximum earthquake for design purposes was $M_L = 4.5$. The distance or depth was not specified. The Staff approved spectra developed by Applicants for this earthquake with the recognition that short duration, high-frequency accelerations from small events could be higher. In developing ground motion estimates Applicants had used a model which assumed that a $M_L = 4.5$ earthquake would occur at a distance of 2 km. Staff updated testimony, ff. Tr. 5758, at 25. The Staff now regards depth as one of the key factors in estimating RIS ground motion. Tr. 5763; Staff Req. Find. 113.

56. According to Staff, a definition of maximum magnitude to be used for design purposes is particularly difficult with respect to RIS. The Staff continues to place great emphasis on experience at other reservoirs in the Piedmont and the largest earthquake in the Piedmont that has tentatively been associated with RIS, the magnitude 4.3 event in 1974 near the Clark Hill reservoir. It was also observed that worldwide RIS earthquakes greater than about a 4.5 occurred in active tectonic areas dissimilar to the Monticello region. Based upon this experience, the Staff adhered to the position that a maximum magnitude of 4.5 was conservative. Staff updated testimony, ff. Tr. 5758, at 25-26, 41.

57. Staff cited approvingly from the testimony of Dr. Nuttli who found no evidence anywhere in the eastern or central U.S. of magnitude 4.5 events occurring at shallow depths (2 km or less). While no depth has been estimated for the Clark Hill earthquake, the intensity and felt area are similar to other earthquakes of this magnitude in the eastern and central U.S. for which Hermann (1979) estimates typical depths of 5 to 16 km. *Id.*, Tr. 5886. Based on this, the Staff took the position that, if indeed a 4.5 event were to be triggered by the reservoir at Monticello, the best estimate as to its depth would be this typical normal depth range of 5 to 16 km. *Id.*; Tr. 568-69.

58. The Staff next addressed its estimation of the maximum magnitude event for the shallow zone of reservoir-induced seismicity (upper 2 km). Staff reviewed several arguments presented which would limit the maximum magnitude. First, the maximum magnitude shallow earthquake at the reservoir to date has been about

$M_L = 3.0$. Tr. 5769. Second, *in situ* stress measurements of M. Zoback of the USGS at Monticello tend to indicate that the events with larger stress drop should occur in the upper few hundred meters. Staff updated testimony, ff. Tr. 5758, at 27. This is supported by the fact that the largest stress drops and the highest peak accelerations have come from events which occur in the upper few hundred meters and also from the fact that seismicity decreases with depth under the reservoir. Tr. 5769. This position was also influenced by the tendency of the frequency-magnitude curve to indicate saturation at about $M_L = 3.0$. *Ibid.*; Tr. 5947, 5953.

59. Staff recognized Zoback's measurements in arriving at its conclusions with regard to maximum magnitude. Tr. 5891, 5897, 5901-02; Staff updated testimony, ff. Tr. 5758, at 41. According to Staff, Zoback's findings appeared to be borne out by the Applicants' calculation of stress drop for the strongest ground motion recorded at Monticello. Staff noted the Applicants' estimates of depths for these events ranging from 70 to 360 meters with the highest stress drops being associated with the earthquake of $M_L = 2.4$ and 2.8 at depths of 200 and 70 meters, respectively. *Id.* at 27.

60. Third, there has been an overall decline in the rate of seismic activity which suggests that stored strain is not being replenished. *Id.* at 28. Fourth, it referred to Dr. Nuttli's testimony which indicated that no earthquake greater than $M_L = 4.0$ has occurred at such shallow depths anywhere within the eastern U.S. Fifth, the Staff's ground motion estimate is not dependent on the Applicant's ground motion model which includes uncertainties in source characteristics such as stress drop and interpretations of saturation of ground motion with distance. Tr. 5769. Sixth, the Staff has chosen to envelope recorded ground motions instead of choosing the 50th or an 84th percentile level of a suite of spectra. *Ibid.*

61. Based on the above, the Staff took the position that the best estimate of maximum magnitude for the shallow zone of seismicity is $M_L = 3.0$. Tr. 5883, 5914-15.

62. Portions of Applicants' case with regard to the maximum magnitude to be expected were unconvincing. Their argument with regard to heterogeneities in rock properties limiting the extent of a single fault movement to 1 km lends support to the proposed limit of $M_L = 4.0$ in the quantitative sense only through application of the Brune model. However, the *in situ* stress measurements and the 1 km source dimension estimate used to apply the Brune model to determine maximum magnitude cannot be relied upon to limit the magnitude to 4.0. See finding 34, *supra*. If the source dimension were doubled from 1 to 2 km, as might be reasonable under circumstances testified to by Applicants' witness (Tr. 5109-10), the magnitude would increase from 4.0 M_L to 4.6 M_L. Tr. 5876-77.

63. The Board concludes, from the evidence relied upon by Applicants and Staff, that a maximum magnitude of between 4.0 and 4.5 is reasonable. The Board further agrees that, if indeed an event between 4.0 and 4.5 were to be triggered by

the reservoir at Monticello, its depth would be the typical normal depth range of from 5 to 16 km.

64. However, the Board does not agree with Staff that the maximum magnitude shallow earthquake that might be expected at the reservoir will be about M_l = 3.0, similar to what had already occurred. The Board finds this inconsistent with the statement in the SER, with which the Board agrees, that "there is no reason to assume that the largest earthquake induced by Monticello reservoir has yet occurred." Stf. Ex. 1 at 2-26. In our opinion, the statement should apply also to the shallow earthquakes at Monticello. Staff's projection of a maximum 3.0 M_l earthquake does not give sufficient weight to Dr. Nuttli's upper limit to magnitude 4.0, rather than 3.0, for shallow earthquakes in the central and eastern United States. More importantly, it ignores two significant shallow earthquakes that the Board believes should serve as a conservative model for the expected maximum shallow event at Monticello: the Lake Jocasse 3.7 M_l RIS event in 1974 at a best estimate depth of 2 km, and the Illinois 3.8 M_l event of 1965 at a depth of 1.5 km. The Lake Jocasse event occurred six years after impoundment of a South Carolina reservoir. The largest RIS worldwide have occurred up to 10 years after impoundment. Tr. 5095-97, 5172; Nuttli testimony, ff. Tr. 5164, at 2, 4; Staff updated testimony, ff. 5758, at 15, 26-27.

65. The Board finds, on the basis of the evidence presented by Applicants and Staff, that a maximum magnitude for a shallow RIS event M_l = 3.8, approximately 1 full magnitude above what had already been experienced at Monticello and equal to the Lake Jocasse, South Carolina and the Illinois events, would be a conservative and appropriate estimate. Any higher magnitude event would be expected to occur at normal tectonic depths.

E. Ground Motion

1. Deep Earthquakes

66. In their original presentation to the Staff and at the opening seismic hearings on June 22-24, 1981, Applicants defined the ground motion from a maximum magnitude 4.5 earthquake using the H-M adaptation of the Brune model, assuming hypocentral distance of 2.0 km and an rms stress drop of 25 bars. The resulting peak acceleration of 0.22*g* was converted to a response spectrum using the 84th percentile (mean + one sigma) amplification ratios of Johnson and Traubenik. In its SER and the original hearing, Staff considered that spectrum and anchor point appropriate for use in evaluating the effects of a reservoir-induced M_l = 4.5 earthquake upon the plant. See findings 10-12, 17, 23, *supra*.

67. At the further hearings in January 1982, Applicants continued to rely upon the H-M adaptation of the Brune model and the Johnson and Traubenik amplification ratios as the main support for their ground motion estimates. Staff revised its

assumptions with regard to the expected depth of this maximum magnitude earthquake and the anticipated stress drop. It assumed that the event would occur at the typical tectonic depths of 5 to 16 km and an rms stress drop of 50 bars would be appropriate. It examined the sensitivity of these changed assumptions upon the Applicants' estimate of 0.22g and found that the effects of the increase in stress drop upon the estimated peak ground acceleration were more than compensated for by the effect of the increase in distance. Since it also considered the use of the Johnson and Traubenik model acceptable at the increased distance and magnitude range, it concluded that the response spectra derived from the maximum magnitude 4.5 RIS are conservative. Staff updated testimony, ff. Tr. 5758, at 35.

68. In view of the unproven ability of the H-M adaptation to predict ground motion in the eastern and central United States and the uncertainties involved in applying that model, the Board cannot rely upon it to establish the ground motion parameters. We find the use of the Johnson and Traubenik amplification ratios less objectionable for use with the typical tectonic depth earthquakes of from 5 to 16 km than with shallow RIS (for which they would be unacceptable). We also find, however, that certain other methods for estimating ground motion utilized by Applicants and Staff in preparing for the further seismic hearings are preferable, and rely upon them instead.

69. At the further seismic hearings, Staff testified that it recently became aware of the availability of an extensive set of strong motion records recorded at an earthquake sequence near Mammoth Lakes, California in 1980. Thousands of records from over a thousand earthquakes in the magnitude 1 to 6 range were recorded. The Staff asked Applicants to evaluate the data set so as to determine whether site-specific spectra suitable for use in determining the ground motion from a $M_L = 4.5$ earthquake could be estimated. *Id.* at 36; Tr. 5907-08.

70. The earthquake sequence occurred predominantly within the Sierra Nevada, immediately to the south of Long Valley caldera. The site conditions within the caldera, where many of the seismographic instruments were deployed for reasons of accessibility and logistics, do not resemble site conditions at the V. C. Summer Nuclear Station. The McGee Creek site lying outside the caldera is more similar to the Summer site. It is situated on a few meters of glacial till underlain by metamorphosed rocks which are in turn draped over granite. All events from magnitude 4.3 to 4.8 recorded on the McGee Creek seismograph were selected for comparison. Tr. 5347-49. For events recorded at McGee Creek in the magnitude range 4.3 to 4.8, the average 50th and 84th percentile peak acceleration values are 0.11 and 0.18g, respectively. Staff updated testimony, ff. Tr. 5758, at 36.

71. Based on its current knowledge, the Staff testified that this data represents the best source of data available to determine ground motion from an $M_L = 4.5$ earthquake in the 5 to 16 m depth range. *Ibid.*; Tr. 5765. The average hypocentral distance of 7.3 km associated with the data set used by the Applicants indicate that

the resulting spectra would be a conservative estimate of ground motion within this range.

72. Staff acknowledged that questions arise with respect to the use of these data in estimating ground motion at an eastern site. These questions relate to regional differences in source characteristics and attenuation, and differences between the site conditions at the Mammoth Lakes recording station and those at the Summer plant. The Staff did not believe, however, that these differences preclude use of the Mammoth Lakes data at the Summer plant. The Staff stressed that the primary difference between eastern and western U.S. is that ground motion from eastern U.S. earthquakes is larger at greater distances. Tr. 5899; Staff updated testimony, ff. Tr. 5758, at 37-38.

73. Applicants' analysis demonstrated that at frequencies less than 7 hertz the Applicants' model spectrum would exceed the Mammoth Lakes spectra for all frequencies. At frequencies greater than 7 hertz the Mammoth Lakes 84th percentile was approximately equal to the model spectrum except for a sharp exceedance centered about 8 to 9 hertz and a slight exceedance at 15 to 20 hertz. *Ibid.* (See figure 1 of Staff updated testimony at 90.)

74. Staff regarded these peaks as consistent with those observed in the individual spectra and believed the peaks reflect the peculiar site conditions at the particular recording station. Staff took the position that the Mammoth Lakes site-specific spectrum verified the conservatism of the Applicants' model RIS spectrum for describing ground motion from an $M_l = 4.5$ earthquake for those structures at the Summer plant founded on rock. *Id.*; Tr. 5767. The Board finds this position both reasonable and convincing and supported by the weight of the evidence.

75. Applicants conducted an analysis of accelerograms recorded during aftershocks of the 1975 Oroville, California earthquake. Accelerograms recorded at five rock-like sites during the aftershock sequence were selected for analysis. RM-5, ff. Tr. 5042, at 1.

76. Forty-four components of horizontal motion were obtained at these sites from standard accelerographs. Magnitudes of these events vary from 4.0 to 5.2 with an average magnitude of 4.4. Focal depths of the forty-four components vary between 6.3 and 12 km with an average of 9.4 km, and hypocentral distances are all less than about 15 km. The records were processed to retain all information in a frequency range from 0.65 to 46 hertz. Values of peak acceleration corrected for instrument response range from 28.7 to 204.6 cm/sec^2 (0.03*g* to 0.21*g*). *Id.*, at 1-2, Table 3; Tr. 5352-53.

77. Applicants also presented testimony from Dr. Nuttli that, for normal depth earthquakes in the eastern United States, peak horizontal accelerations in the near-source region of $M_l = 5$ earthquakes are estimated at 0.11*g*, which is less than the SSE value. Nuttli testimony, ff. Tr. 5164, at 7. However, there were few data points in the curves on which he based his testimony, and all but one were

concentrated around a distance of 100 km from the source. Furthermore, the curves were constructed for an assumed focal depth of 10 km. Dr. Nuttli indicated that he would not feel comfortable in using the curves for anything but far-field earthquakes and that, even with those, an assumed focal depth of less than 10 km (such as 5 km) would require that the curves be pushed up to higher values. *Id.*, at figure 2; Tr. 5475-76. Under these circumstances, the Board does not place any reliance upon Dr. Nuttli's curves to establish or support any ground motion parameter.

78. As an additional measure, the Staff compared the peak acceleration of 0.22*g* proposed by Applicants with estimated peak accelerations for an $M_L = 4.5$ earthquake derived most recently by other investigators using other techniques. Staff updated testimony, ff. Tr. 5758, at 38; Tr. 5907-08. This comparison with recent estimates of peak acceleration versus magnitude and distance for different locations around the world indicated a wide variation in estimates, with Applicants' assumed peak of 0.22*g* exceeding almost all of these estimates. *Id.* at 41.

79. Board witness Dr. Luco agreed with the ground motion estimates made by Staff in its supplemental testimony with regard to normal tectonic depth earthquakes. For a maxmimum magnitude earthquake on the order of 4.5 at a depth of greater than 5-6 km, he found the mean + one standard deviation spectra for Mammoth Lake and Oroville to support the reasonableness of Applicants' 0.22*g* RIS spectra for defining the maximum ground motion from these deeper events. Tr. 4728, 4973, 5596. Board witness Dr. Joyner also had no problem with the ground motion from the deeper events. Tr. 5733. The Board agrees that the ground motion from earthquakes up to 4.5 M_L at normal tectonic depths will not exceed Applicants' 0.22*g* RIS spectra.

2. *Shallow Earthquakes*

80. In addition to relying upon the H-M adaptation of the Brune model (which the Board finds unreliable), Applicants also made ground motion estimates based upon scaling up the ground motion from six events at the Monticello reservoir to a 4.0 magnitude earthquake. Applicants' witness Dr. Robin McGuire scaled up the spectral amplitudes from these events directly rather than scaling the spectral shapes using a parameter such as peak ground acceleration. In Dr. McGuire's opinion, although the data were inadequate for conclusive estimates, the comparison indicated that the Applicants' RIS spectrum was adequate in that it appeared to envelope the scaled values, except perhaps at high frequencies. Tr. 5555-65 (including insert).

81. However, in addition to not being conclusive, the scaling was also defective. Dr. McGuire used a factor of 0.5 to represent amplification in the records, which the Board does not accept as having been established. Furthermore, had he used the correct exponent of 0.5, rather than 0.25, it would have resulted in

the amplitudes at 4.0 magnitude being multiplied by a factor of 1.7. Tr. 5741-48. Consequently, the Board does not accept that analysis.

82. According to Staff, use of the Applicants' model is not appropriate to determine ground motion from shallow earthquakes at close distances. As it testified, the Johnson and Traubenik amplifications would not be appropriate where significant ground motion is expected at high frequencies such as have already been observed from nearby earthquakes at Monticello. In addition, the issue of saturation of ground motion with distance would have to be resolved if earthquakes at very close distances (within two source radii) were considered. Tr. 5912; Staff updated testimony, ff. Tr. 5758, at 41-42.

83. The peak acceleration at Monticello of 0.35g, for the October 16, 1979 event, was recorded at a hypocentral distance of 0.8 km from a magnitude 2.8 earthquake at a depth of 70 meters. The Staff examined the effects an increase in magnitude would have upon ground motion estimates. Utilizing peak acceleration (that parameter most related to spectral response at high frequencies), the Staff stated that one can estimate the ground motion at these frequencies. Assuming a scaling with magnitude recommended by Joyner and Fletcher and a typical scaling with respect to distance, it was indicated that 0.35 g for an $M_l = 2.8$ earthquake at 0.8 km would scale to the same value or less assuming an $M_l = 4.0$ earthquake at a distance of 2 km or more. *Id.* at 43.

84. If a larger event were to occur, Staff assumed it would be deeper and the resultant ground motion from this event would be enveloped by the envelope of existing ground motions and estimated RIS spectra. Staff found 2 km to be a very conservative estimate of hypocentral distance based on the distance of the plant to the earthquake clusters and Dr. Nuttli's estimate of 2.3 km as the shallowest depth at which an $M_l = 4.0$ event would occur. Thus, the larger but deeper events would have acceleration values that are the same or less. *Ibid.*; Tr. 5770, 5913.

85. Staff emphasized that the purpose of scaling peak acceleration was not to arrive at a definitive estimate of peak acceleration from an $M_l = 4.0$ at 2 km. Rather, the purpose was to provide some reasonable estimate as to the relative difference at high frequencies between the highest ground motion recorded so far at the Monticello dam abutment and the ground motion that may be recorded near the Summer plant from a postulated larger earthquake within the shallow zone of reservoir-induced seismicity. Staff updated testimony, ff. Tr. 5758, at 43.

86. The Staff concluded that the appropriate designation of the largest ground motion at the Summer site from the occurrence of RIS within the shallow zone of seismicity is the envelope of the response spectra from data that have been recorded at Monticello. *Id.* at 44; see figure 1 of Staff updated testimony at p. 90. The Board finds this position both reasonable and conservative. This ground motion envelope exceeds the Applicants' proposed RIS spectrum at frequencies greater than 10 hertz.

87. In reaching the conclusion that the envelope of the response spectra from data recorded at Monticello can be relied upon, the Board relies heavily upon the agreement of Board witnesses Drs. Luco and Trifunac with this procedure. Dr. Luco recommended that the effects of scattering by the embedded foundation also be taken into account to the extent of any expected reductions of motion in the frequency range of from 5 to 30 hertz. Tr. 4711-12, 4982, 5596-97. The Board agrees that those effects should be taken into account in the further confirmatory tests. The Board also relies upon the testimony of Staff seismologist Dr. Andrew Murphy that larger magnitude events tend to occur at deeper depths for its conclusion that the maximum shallow earthquake postulated by Staff of M_L = 4.0 will occur at a distance of 2 or more kilometers from the plant. See Tr. 5781. The Board notes that its concern for shallow earthquakes extends only to a maximum of 3.8 M_L, as discussed earlier.

88. The Board also notes that Board witness Dr. Joyner scaled ground motion from the August 1978 2.8 M_L event to higher magnitudes. Because he maintained hypocentral distances of less than 1 km for the higher magnitude events, which the Board finds would not likely occur within a depth of only 1 km, the Board does not accept his higher ground motion estimates. See Joyner report of November 12, 1981, ff. Tr. 4696, at Table 1.

F. Damage to Plant and Equipment

89. On the basis of the evidence adduced, Board witnesses Drs. Luco and Trifunac saw little danger to the nuclear plant structures themselves from the maximum magnitude earthquakes projected for the Monticello reservoir area. Tr. 4884, 4988. The Board agrees with that assessment. As a general proposition, none of the witnesses were aware of any damage to engineered facilities from an earthquake equal to, or less than, a magnitude 5. Tr. 4847-48, 4962-63, 5000, 5262, 5332. This lack of observations of damage should obviate any concern for damage to plant structures from the postulated maximum 4.5 M_L earthquake at normal tectonic depths. Furthermore, the maximum epicentral intensity for a Piedmont Province earthquake was Intensity VII, and for the Clark Hill earthquake, upon which the projected 4.5 maximum magnitude deep earthquake was primarily based, only about Intensity V. Tr. 5947-48, 5960. By definition, an Intensity VII earthquake would not cause damage to engineered structures.[9]

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[9] Intensity VII on the Modified Mercalli Intensity scale of 1931, the intensity scale utilized by the expert witnesses, is defined by *United States Earthquakes, 1978* at 6, as follows:

VII Frightened all — general alarm, all ran outdoors. Some, or many found it difficult to stand. Noticed by persons driving motor cars. Trees and bushes shaken moderately to strongly. Waves on ponds, lakes, and running water. Water turbid from mud stirred up. Incaving to some extent of sand or gravel stream banks. Rang large church bells, etc. Suspended objects

(Continued)

90. Similarly, while there have been few opportunities for observations of damage to engineered facilities from shallow earthquakes in the range of interest, Applicants' expert, Dr. Nuttli, has correlated the most damaging eastern United States earthquakes occurring at shallow depths with their epicentral intensities. Except for two earthquakes occurring in a region of intensive mining, in or above a mine itself, in which maximum intensity was VIII, the maximum intensity of the other earthquakes was Intensity VII. Tr. 5174-76. It is extremely unlikely that the historical maximum intensity of VII for a nonmining region for all shallow eastern U.S. earthquakes would be exceeded by an earthquake occurring at a shallow depth at Monticello.

91. More specifically, with regard to the spectral values of ground motion anticipated at Monticello, we see no likelihood of damage to the nuclear plant structures. To begin with, these structures have natural periods longer than those corresponding to the high frequencies discussed above, at 10 hertz or greater. The peak accelerations, which might occur as random high frequency spikes on the acceleration time history, do not represent a significant energy input to the structures. The response of the structures would be essentially the same whether or not the peaks occur. The high frequency spikes do not contain sufficient energy to overcome the inertia of large structures and the frequency of the spikes is well above the response frequency of the power plant structures, thus precluding resonant response. Staff examined the effect of the spectral exceedances in question on the safety related structures. It testified that these structures all have fundamental frequencies below 10 hertz, significantly removed from the peak high frequency motions characterized by the free-field response spectra. Because of this difference in frequency, the response of major structures of the high frequency motion will be low and less than the response spectra predicted by use of the SSE response spectra. According to the Staff, the stresses induced in the structures are controlled by the SSE response spectra. Staff updated testimony, ff. 5758, at 63; Tr. 5772-73.

92. Applicants have demonstrated many conservatisms in the design and construction of the nuclear plant structures above and beyond the design response spectra to which the plant structures were built. Since the Board has found that spectral exceedances due to the reservoir-induced events (both deep and shallow) fall in the range above the fundamental frequencies of the safety related structures,

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made to quiver. Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Cracked chimneys to considerable extent, walls to some extent. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows, furniture to some extent. Shook down loosened brickwork and tiles. Broke weak chimneys at the roof-line (sometimes damaging roofs). Fall of cornices from towers and high buildings. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking. Damage considerable to concrete irrigation ditches.

the conservatisms constitute additional reasons why the safety of the structures is beyond question.

93. With regard to safety related equipment and components, however, there is greater concern. Their natural frequencies range between 4.5 and 44.7 hertz, and they might be affected by the spectral exceedances above 10 hertz. Applicants have demonstrated that certain margins exist in the original design of the equipment and components that might accommodate ground motion exceedances over the original design spectra from reservoir-induced seismicity. See Chen testimony, ff. Tr. 5324. Board witness, Dr. Luco, examined the safety margins and expressed some concern with regard to certain pieces of equipment or piping where the margins amounted only to approximately 30%. Tr. 4727, 4730, 4971-72, 4986-88, 5439. The Board agrees that, only with respect to equipment which the safety margins have been shown to be low, is there any concern.

94. Staff discussed the effect of spectral exceedances on systems and equipment mounted in the structures. These will be excited by the motion of the structure at the mounting location(s) of the various components. It noted that higher frequency motion (above 10 hertz) with little amplification will theoretically be present in excess of that predicted by the ground motion characterized by the SSE response spectra. In the judgment of the Staff, prudence suggested that any evaluation include the high frequency motions. Staff updated testimony, ff. Tr. 5758, at 63-64. The Board agrees. Systems and equipment mounted on or near the foundation slab will experience the high frequency motions directly transmitted through the slab. According to the Staff, it is for this group of components that evaluation of the higher frequency motion is most significant. *Ibid.*

95. The equipment and components now installed in the plant have been qualified by tests and analysis to the SSE design level. The practicalities of much of the testing are such that this equipment has, in fact, seen excitation at the higher frequencies up to perhaps 40 hertz. As far as structural integrity, much of this equipment can take very high peak acceleration loads. Tr. 5774, 5796.

96. Further insight into the sensitivity of nuclear safety grade components to high frequency excitation (20 to 80 hertz and above) is available through the extensive requalification testing being performed for Mark II and Mark III boiling water reactors. The firms supervising the test program report that inputs less than 60 hertz rarely cause malfunction and that where malfunction has occurred, the mode has been primarily minor contact chatter. Staff updated testimony, ff. Tr. 5758, at 65.

97. Applicants have a present commitment to review all systems and components necessary for shutdown and continued heat removal to confirm that explicit margins exist for each safety component. *Id.* at 5, 65. Staff characterizes this effort as confirmation that the equipment with high-frequency response on the lower levels of the facility have appropriate margins to perform their intended function for the life of the plant. Staff proposed find. 164. The Staff testified that reservoir-

induced ground motion employed for this evaluation should, to the extent reasonable, take into consideration appropriate reductions in the free-field spectra. Tr. 5774, 5787. The Board agrees. The ACRS advised, and the Staff concurred, that undertaking this confirmatory program need not prohibit plant operation. Tr. 5774-75. The Board agrees. The Staff believes this task could be completed during the early period of operation. Tr. 5787.

G. Charleston Earthquake

98. At the construction permit stage, the NRC Staff concluded that the weight of the seismologic and geologic information supported the proposition that the seismicity in the vicinity of Charleston, S.C., including the Modified Mercalli intensity IX-X 1886 earthquake, was related to structures beneath the Coastal Plain province in the Charleston area and should not be assumed to migrate outside of the immediate Charleston area. The Licensing Board presiding at that stage agreed. *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Unit 1), LBP-73-11, 6 AEC 213, 218 (1973). Following the issuance of the construction permit, the then AEC contracted with USGS to perform an extensive geologic and seismologic investigation of the Charleston region. As the USGS investigation progressed, numerous working hypotheses evolved concerning the source mechanism of seismicity in that area. A summary of the USGS position on this matter is contained in a December 30, 1980 letter from J. F. Devine, USGS, to Dr. R. E. Jackson, NRC, which is included as Appendix E to Staff Exhibit 1. That letter concluded, in material part, that the concentration of seismicity in the Charleston earthquake epicentral area both before and after the 1886 event and the lack of post-Miocene faulting in the evidence for localizing large earthquakes indicate that the likelihood of a Charleston size event in other parts of the Coastal plain and Piedmont is very low. Consequently, the report continued, earthquakes similar to the 1886 events should be considered as having the potential to occur in the vicinity of Charleston and seismic engineering parameters should be determined on that basis. *Id.*, Tr. 1070-71. It continued with a recommendation that research on the sources of the Charleston and other East Coast earthquakes should continue if a more definitive resolution of the problem is to be obtained.

99. Applicants also performed a reassessment of the impact of Charleston seismicity on the Summer site in light of the new data compiled by the USGS since the construction permit stage. Applicants' assessment is contained in their Exhibit 1. Applicants' position on the Charleston earthquake was summarized in the prefiled testimony of Dr. Alexander. It concluded from the extensive work done by USGS, evaluations of the most prominent hypotheses, the probabilities of future occurrences and the historical record of seismicity in the Charleston area, that there was no observational evidence to indicate that an earthquake comparable to the 1886 event will reoccur in any location except in the Charleston vicinity. Dr.

Alexander further testified that a recurrence of such an event in the Charleston area will not generate ground motions that exceed the Summer design basis. Alexander testimony, ff. Tr. 728, at 16. *See* Tr. 921-22.

100. Staff reviewed the results of the USGS study of the Charleston region, the working hypotheses formulated as a result of that work, and the analyses of the Charleston region performed by the Applicants. Based on its consideration of this information, the Staff concluded that the position held at the construction permit stage is still valid, namely, that there is no basis to assume that an earthquake equivalent to the 1886 Charleston earthquake is likely to occur anywhere but in the general vicinity of Charleston, South Carolina. Staff took the position that the 1886 Charleston earthquake can be reasonably related to the complex geologic structure unique to the region and in consideration of the recurrent seismicity in the area should not, in developing the earthquake design basis for the facility, be assumed to occur at the Summer site. However, because a clear association between structure and seismicity has not been demonstrated, it recommended that geological and seismological research be continued in the Charleston area. Stf. Ex. 1 at 2-38 to 2-39. It reaffirmed this position at the hearing that there was no basis to migrate the Charleston earthquake to other parts of the Coastal Plain or Piedmont provinces. Tr. 1063, 1070-71, 1155.

101. The Board has reviewed the evidence presented and finds that it supports the reasonableness of the construction permit Licensing Board's conclusions that the 1886 Charleston earthquake can be localized to the local Charleston area. The Board, therefore, concludes that there is no new information that warrants reopening this matter at this operating license stage for a re-determination on the merits.

H. Wateree Creek Fault

102. Subsequent to the impoundment of the Monticello reservoir and the ensuing increase in local seismic activity, the USGS contracted the services of Dr. Donald T. Secor, Jr., Department of Geology, University of South Carolina, to conduct an intensive geologic investigation of the general area surrounding the reservoir. During the course of the investigation, Dr. Secor mapped a previously unrecognized fault within the Chapin quadrangle which he named the Wateree Creek fault. Alexander testimony, ff. Tr. 728, at 16-18. Applicants' expert Dr. Alexander testified that, on the basis of his review of the findings of Dr. Secor to date, the fault had been traced northward to a point approximately 2 km northeast of Peak, South Carolina and there was no observational evidence of northward continuation of the fault to the vicinity of the Monticello reservoir. Further, there was no geological evidence to suggest that the fault is capable nor has any seismicity been associated with it. *Id.* at 18-19. Accordingly, Applicants did not believe this feature was of concern to the safety of the facility. *Ibid.*

103. The Staff took the position in the Safety Evaluation Report that, on the basis of the information then known, it was reasonably assumed that the Wateree Creek fault may be presently adjacent to the Monticello reservoir, that there is no historic seismicity associated with that fault, and that there is no geological evidence for capability of the Wateree Creek fault. Stf. Ex. 1 at 2-26 to 2-27. Thus, the Staff concluded that the Wateree Creek fault did not pose a hazard to the site. The Staff did consider it prudent, however, for Applicants to continue to monitor the ongoing mapping of that fault. *Id.* at 2-39.

104. In order to explore the matter further, the Board sought the appearance of Dr. Secor to explain the state of knowledge about the Wateree Creek fault. Dr. Secor explained the status of his mapping efforts and testified that he found no evidence that the Wateree Creek fault extended into the Monticello quadrangle (Tr. 793), that the fault had not moved in "roughly one hundred million years" (Tr. 794) and that the attitude of the fault was not "particularly favorable for reactivation" (Tr. 796). Dr. Secor professed his general agreement with the conclusions drawn by Applicants from his work. Tr. 795. Dr. Secor further testified that there was no unknown area that would cause him to have reservations about the Wateree Creek fault upsetting the conclusions of the USGS or NRC Staff so far concerning the site. Tr. 799. Finally, Dr. Secor testified that the reservoir-induced seismicity was unrelated to the Wateree Creek fault (Tr. 801) and that the Wateree Creek fault would not likely be activated by reservoir-induced seismicity (Tr. 803).

105. Applicants felt that Dr. Secor's testimony strengthened their earlier testimony. Tr. 980. In addition, on the strength of Dr. Secor's testimony, the NRC Staff expressed less certainty about its earlier position on the possible northward continuation of the Wateree Creek fault. Tr. 1063. It observed that the fault was older than it had previously thought. Tr. 1092. On the basis of the entire evidence on this matter the Board finds that the Wateree Creek fault poses no hazard to the Summer site.

I. Continued Microseismic Monitoring

106. The final seismic issue concerned Intervenor's contention that seismic monitoring should continue until the end of 1983. The NRC Staff indicated its intention to impose a license condition whereby the Applicants must continue to monitor seismicity until the end of 1982 and may not terminate such program unless prior written approval is received from the Staff. Stf. Ex. 1b at 18-3. The Staff believes that this continued monitoring is desirable in order to detect any possible event larger than that experienced to date. Stf. Ex. 1 at 2-23; Tr. 1069. Applicants testified that they believed that the largest or approximately largest reservoir-induced event had already occurred at the site — magnitude 2.8. Tr. 886-888, 909.

107. The Board agrees with the Staff that continued microseismic monitoring is desirable. Considering that the Board also agrees with the SER's statement (Staff Exhibit 1 at 2-26) that "there is no reason to assume that the largest earthquake induced by Monticello reservoir has yet occurred"; that the largest reservoir-induced earthquakes generally occur up to 10 years after impoundment; and that the maximum event at Lake Jocasse, S.C. occurred about six years after water level approached full pond, we cannot see how the elimination of seismic monitoring before the end of 1983 can be justified. Full pond elevation occurred on February 8, 1978. *Id.* at 2-22. Staff could not explain why the same reasons that require monitoring until the end of 1982 would not also require monitoring to continue at least until the end of 1983. Tr. 1146-49.

IV. PRINCIPAL FINDINGS

108. The maximum magnitude potential earthquake at normal tectonic depths (5-16 km) at the Monticello reservoir is $M_l = 4.5$.

109. The maximum magnitude potential earthquake at shallow depths (0-3 km) at the Monticello reservoir is $M_l =$ [illegible].8.

110. The ground motion model (the H-M adaptation of the Brune model) relied upon by Applicants in the FSAR and the opening hearings on seismicity (June 22-24, 1981), and approved by Staff in the SER, is unreliable. Because of its uncertain parameters, a conservative application of that model would result in a peak acceleration anchor point 3 or 4 times as great as the 0.22g anchor point predicted by Applicants. For the earthquakes occurring on October 27, 1978 and October 16, 1979, rms stress drops for each event were conservatively calculated at from 2 to 4 times the 25 bars utilized by Applicants in their application of the H-M model. The H-M model is too unpredictable to be used for estimating ground motion.

111. The Johnson and Traubenik amplification ratios used by Applicants to construct response spectra, upon which Applicants relied in their SER and the opening seismic hearings and which was approved by Staff in the SER, are inappropriate for the shallow reservoir-induced seismicity expected at Monticello reservoir.

112. Applicants have failed to demonstrate that the high peak horizontal acceleration readings for the August 1978 and October 1979 earthquakes of 0.25g and 0.35g, respectively, reflected any amplification of ground motion as the waves propagated from the underlying bedrock to the surface where they were recorded. In particular, Applicants have failed to demonstrate that there was any amplification due to soil, topography, or accelerometer pad-soil interaction. It is likely, however, that the ground motion exhibited in the free field during an earthquake would be reduced as it is transmitted to the nuclear plant structures embedded in rock because of a scattering of the waves and the rigidity of the foundations

113. Through use of ground motion estimates and response spectra derived from earthquakes at Mammoth Lake and Oroville, California, Applicants and Staff have demonstrated that the ground motion from the maximum magnitude earthquake postulated for normal tectonic depths (5-16 km), utilizing the appropriate damping values, will not exceed the motion predicted by Applicants' SSE design response spectra. For that reason, and on the basis of empirical observations with regard to epicentral intensities and damage from other tectonic events, Applicants and Staff have demonstrated that there will be no damage to the nuclear plant structures or equipment from a maximum magnitude earthquake occurring at normal tectonic depths.

114. By utilizing the envelope of response spectra from data already recorded at Monticello, Staff has demonstrated that the ground motion from the maximum magnitude postulated shallow event, at the proper damping values, will exceed Applicants' SSE design response spectra only at frequencies greater than 10 hertz. For that reason, and based upon empirical observations with regard to epicentral intensities from other shallow earthquakes in the eastern United States and from observations of damage from other earthquakes, Applicants and Staff have demonstrated that the maximum magnitude shallow earthquake postulated for the Monticello reservoir (3.8 M_l) will not damage the nuclear plant structures.

115. Because some of the safety related equipment and components have natural frequencies above 10 hertz, and some of the systems and equipment are mounted on or near the foundation slab where they will experience high frequency motions transmitted directly through the slab, Applicants have committed themselves to reviewing the systems and equipment necessary for shutdown and continued heat removal to confirm that explicit safety margins exist for each component. The Board agrees that this review may take into account appropriate reductions of ground motion attributable to the embedment of the foundations in rock and that the Summer plant can commence operations prior to the completion of the confirmatory program. The Board, however, does not agree that the confirmatory program can rely upon any of the evidence adduced in this proceeding as establishing amplification factors in the ground motion recordings due to soil, topography, or accelerometer pad-soil interaction.

116. The existence of the Wateree Creek fault does not pose any danger to the Summer nuclear plant.

117. No evidence has been adduced which would warrant reopening the finding of the construction permit Licensing Board that the 1886 Charleston earthquake should be localized to the immediate Charleston area.

118. It is likely that the maximum magnitude earthquake from RIS at Monticello will not occur until 6 to 10 years after impoundment, which took place in February of 1978.

V. CONCLUSIONS OF LAW

Based upon the entire evidentiary record of this proceeding and upon the foregoing findings of fact, the Board concludes that with regard to Contention 4: a) the FSAR was inadequate with respect to the description of seismic activity in the area of the Summer plant site. However, the inadequacies were cured by the full record in this proceeding; and b) site seismicity must be monitored at least until the end of 1983, and Staff should consider further monitoring at that time as an additional licensing requirement.

The Board concludes further that, if the licensing conditions set forth below are implemented, the seismic safety of the Summer nuclear plant will be assured.

VI. LICENSING CONDITIONS

In the event that the other issues are resolved in favor of plant operation (with or without further conditions), the Licensing Board will require the following conditions to the granting of the operating license:

1. That seismic monitoring be continued at least until December 31, 1983, and that Staff reevaluate at that time the need for further monitoring to be made an additional licensing requirement; and

2. That Applicants successfully complete during the first year of operation the confirmatory program on plant equipment and components, within the guidelines established in the Findings, to demonstrate to Staff's satisfaction that explicit safety margins exist for each component necessary for shutdown and continued heat removal in the event of the maximum potential shallow earthquake.

VII. ORDER

IT IS ORDERED, in accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785, and 2.786, that this Partial Initial Decision shall become effective and shall constitute, with respect to the matters covered herein, the final decision of the Commission 30 days after the date of issuance hereof, subject to any review pursuant to the above cited Rules of Practice. Exceptions to this decision may be filed within ten (10) days after service of this Partial Initial Decision. A brief in support of such exceptions may be filed within thirty (30) days thereafter, forty (40) days in the case of the Staff. Within thirty (30) days after service of the brief of appellant, forty (40) days in the case of the Staff, any other party may file a brief in support of, or in opposition to, such exceptions.

ATOMIC SAFETY AND
LICENSING BOARD

Gustave A. Linenberger, Member
ADMINISTRATIVE JUDGE

Dr. Frank F. Hooper, Member
ADMINISTRATIVE JUDGE

Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland,
July 20, 1982

VIII. APPENDIX

Procedural Context of Our Calling Board Witnesses

Unlike the other parties to the proceeding, Staff did not accept the Board's decision to call independent experts as Board witnesses. It moved for directed certification of this ruling, primarily on the grounds that we had not adequately explained or articulated our reasons for calling these experts. Staff Motion for Directed Certif., August 7, 1981, at 1, 3, 12. Staff suggested that the Board Chairman had certain "precise questions" relating to his areas of concern that he had not posed to Staff. *Id.* at 2. It suggested that the Appeal Board "instruct" the Licensing Board to refrain from calling its experts without attempting to elicit this desired information from the witnesses proffered by the parties (*Id.* at 4), and asked for a rule that would require a licensing board to make a finding of "exceptional circumstances" before calling its own experts (*Id.* at 9, 12, 14).

Apparently acting upon Staff's representations that this Board had failed to explain adequately its reasons for calling Board experts, the Appeal Board requested our full explanation. Appeal Board Memorandum of August 10, 1981, 14 NRC at 1159. We responded, indicating that we had explained our position at transcript pages 3790-3817. Memorandum of August 11, 1981. We indicated further that the inadequacies surmised by us did not relate to Staff's testimony but, rather, to the Staff's review as disclosed by the testimony — a matter that did not lend itself to correction merely by adducing further Staff testimony. We described the choices before us as having been (1) to close the record on the evidence already received, (2) to schedule a further hearing involving only the previously heard witnesses (whose further testimony might still be inadequate for a satisfactory record, necessitating a further delay to retain independent experts) or (3) to attempt to arrange for independent experts and further hearings with all deliberate speed. We pointed out that we had not discouraged further testimony by Staff's witnesses but had indicated that the parties would be given full opportunity to respond to any positions that might be taken by the Board witnesses and encouraged the parties to make full use of that opportunity. Finally, we offered that the experts we had selected should be in a good position to critique the Applicants and Staff's choice of modeling methods and data, about which the Board had expressed some concern (*i.e.*, the Hanks and McGuire adaptation of the Brune model and the stress drop inputs).

In response to our memorandum, the Appeal Board ordered that responses to the Staff's motion be filed and served no later than August 21, 1981 and that, on or before that same date, the Staff might file a supplemental paper in support of its pending motion, confined to the content of the Licensing Board's memorandum. Staff filed that supplement on August 21, 1981 and shifted its focus to criticisms of the Board Chairman's supposedly pejorative thoughts and accusations. We discussed Staff's criticisms in our Memorandum and Order of October 15, 1981, LBP-81-47, 14 NRC 886, 870, and will not repeat it here. Staff's memorandum also indicated that it would present the further prefiled testimony of its seismic panel by September 15, 1981.

On August 25, 1981, the Appeal Board ordered that the Staff file its supplemental testimony no later than September 15. The Appeal Board conjectured that, following the Licensing Board's consideration of that supplemental testimony, the Licensing Board might no longer find it necessary to call the independent experts. The Appeal Board's Order indicated that it would issue a further memorandum elaborating upon the matter.

On August 27, 1981, the Appeal Board issued an unpublished memorandum in which it indicated that it had not yet undertaken a review of the testimony of the parties. Appeal Board Memorandum of August 27, 1981, fn. 1 (later published in an Appendix to ALAB-663, 14 NRC 1140 (1981) at 1161). By merely scrutinizing the Board Chairman's remarks, without referring to the evidence adduced, the Appeal Board determined that any evidentiary deficiencies would appear to be amenable to resolution through further Staff review and testimony, and that the dichotomy drawn by the Licensing Board between the Staff's testimony and the Staff's review was a distinction without a difference. With a view towards the Licensing Board's reviewing the expected Staff prefiled testimony due on September 15, 1981, the Appeal Board laid down a standard to be applied to the calling of Board experts. The Appeal Board opined (14 NRC at 1163) that "such an undertaking * * * [the calling of Board experts] should be reserved for the most extraordinary situation in which it is demonstrated beyond question that a Board simply cannot otherwise reach an informed decision on the issue involved."

Moreover, even before reaching the point at which that suggested general rule might be applied to determine whether Board witnesses could be called, the Appeal Board suggested options that must be explored if the Licensing Board had been persuaded for one reason or another that certain of the evidence is unreliable. As stated by the Appeal Board, "among other things, the [Licensing] Board can (1) simply reject that evidence and decide the issue without regard to it (*i.e.*, on the basis of the other evidence of record); or (2) require the sponsoring party to produce supplemental testimony which is not subject to the same infirmities." *Ibid.*

With regard to this standard, we must state at the outset that we did not fully understand it. Nor did we take it to be a rule imposed on this Board. To begin with, as we later pointed out in LBP-81-47, 14 NRC 866, 874 (1981), we did not see how that standard could ever be satisfied in an operating license proceeding. Since the burden is on the applicant to establish that the safety issues should be resolved in favor of plant operation, we thought that where a Board simply cannot otherwise reach an informed decision on the issue involved, imposition of the standard would logically require a denial of the license. Consequently, we thought our reading of the Appeal Board's standard would place that standard in conflict with a number of NRC cases in which the respective licensing boards had called their own experts (see cases cited at LBP-81-47, *supra*, at 14 NRC 873) and the heretofore prevailing standard announced by the Appeal Board in *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603, 608 (1977), that "the decision to call or not to call a witness for the Board must rest and does rest ultimately in the sound discretion of the tribunal alone." Moreover, the apparent prohibition against a board's calling its own expert would be contrary to the Federal Rules of Evidence, all existing judicial authority, and accepted administrative practice, as later discussed in LBP-81-47, *supra*, 14 NRC at 872.

In addition to our not being able to reconcile the Appeal Board's standard with established practice, the procedural context in which the standard was announced persuaded us that it was not intended as a ruling imposed upon this Board. As we read the standard, it appeared to track the relief requested by Staff in its motion for directed certification, that the Board be required to make a finding of "exceptional circumstances" before calling its own experts. Staff motion at 9, 12, 14. However, if the Appeal Board were deciding the matter before it, it would be expected to read the evidentiary record concerning that matter, which it indicated it had not. Memorandum of August 27, 1981 at fn. 1, 14 NRC at 1161. Furthermore, the Appeal Board had announced in both its August 25 and August 27 memoranda that it was *not* deciding Staff's pending motion for directed certification and was holding it in abeyance. 14 NRC at 1160, 1164. Finally, we did not believe that the Appeal Board intended to issue a ruling that would, in effect, grant the Staff's motion to reverse our actions, based upon a new standard that apparently revoked its prior standard, in a manner that would effectively preclude Commission review of its action. If we then were to apply that new standard and decide not to call the experts, the matter might never reach the Commission.[10]

In the context of the substantive and procedural anomalies just discussed, we were uncertain of the meaning and application of the Appeal Board's pronouncements. In the very next hearing session, in fact, the Licensing Board Chairman expressed his uncertainty, as follows (Tr. 387-88):

> Mr. Knotts [Applicants' counsel], if you would care to expound upon what the procedures are and what the obligations are with regard to the Appeal Board's memorandum [of August 27, 1981, *supra*], we'd be glad to hear from you but I don't think at this point that we're prepared to say anything about it and as I indicated in the conference call, there are some procedural problems and substantive problems with regard to that memorandum, but to the extent that you want to offer your positions we'd be glad to hear them, or any other party before we decide on what we ought to do further, that is orally here at hearing. We are not asking for any further briefs.

Applicants' counsel responded (Tr. 388) by indicating that he "didn't really have anything to add in that regard," and none of the other parties offered an interpretation.

As we finally interpreted the Appeal Board's actions (mistakenly, it now appears), they were designed to give us a strong indication that the Appeal Board was inclined to disagree with us as a matter of initial impression without reviewing the record, and was affording us an opportunity to reverse our own actions without risking a formal reversal. The Appeal Board's actions we thought, were taken to permit us to withdraw gracefully from a position that otherwise would likely be reversed upon a full review of the record. We found support for our view in the statements made in the Appeal Board's August 25, 1981 memorandum, that it was "possible that, following . . . [our] consideration [of the Staff's supplemental testimony], the [Licensing] Board will no longer find it necessary to resort to the independent consultants" and, "[s]hould that contingency materialize, the pending Staff motion will, of course, become moot." 14 NRC at 1160.

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[10] We do not discuss this matter to suggest any impropriety in the Appeal Board's handling of this matter. We accept the Appeal Board's authority to determine the propriety of its own actions vis-a-vis the Licensing Board. We merely raise the procedural aspects of this matter to demonstrate that there was considerable foundation to our considering the new standard as a suggestion rather than an unannounced order.

Staff submitted its proposed further prefiled testimony on September 15, 1981. We read that testimony and reviewed the evidentiary transcripts. We saw nothing in the further testimony that resolved our concerns with regard to the critical aspects of the seismic issues. As we read the evidentiary transcripts, we noted that, contrary to Staff's persistent assertions throughout its August 7, 1981 and August 21, 1981 submittals to the Appeal Board that any insufficiency in the record was attributable to the failure of the Board to ask appropriate questions of Staff's witnesses, we had examined Staff's and Applicants' witnesses critically and in depth on the areas of concern, without satisfaction. We had questioned critically the ground motion figures actually recorded near the site (Tr. 757-63), and the basis for Staff's acceptance of Applicants' theory that there had been an amplification of ground motion from bedrock to the Jenkinsville accelerometer because of soil and topographical characteristics (Tr. 1141-46). We had, as indicated above, suggested a further examination into the USGS records and reports regarding the Jenkinsville accelerometer (Tr. 3799). We had examined, repeatedly and critically, all of the testimony we had heard with regard to the exclusive reliance by Staff and Applicants on the H-M model and the critical input of a stress drop of 25 bars, based upon a conservative projection of a 17 bar calculation for a prior event, to calculate expected future ground motion (*i.e.*, the zero period acceleration point at which to anchor the response spectra). Tr. 861-77, 933-37, 940-46, 971-74, 1004-07, 1018-19, 1122-34, 1136-37, 1186-90, 1207-13, 1221-22.

Acting upon our mistaken view that the new standard laid down by the Appeal Board was a preliminary view based upon a cursory review of the record that might be subject to change upon the Appeal Board's full and formal consideration of Staff's pending motion for directed certification, we issued our Memorandum and Order, LBP-81-47, *supra*, reaffirming our intention of calling independent experts. With the purpose in mind of persuading the Appeal Board to reverse what we assumed to be a preliminary position and ultimately decide the issue in our favor, we marshalled authorities to support our legal position and urged the Appeal Board to reconsider its "suggested" new standard in light of the evidentiary record. As the Licensing Board then stated (at 875):

> We have no doubt that if the Appeal Board were to consider the Licensing Board's decision to call expert witnesses in the context of the live facts of this case, as would be disclosed by its reading the transcript of hearing, it would reconsider proposing that new standard and would affirm this Board.

We had set these matters before the Appeal Board as respectfully as we knew how, and indicated that "we recognize the authority of the Appeal Board to decide these matters contrary to how we view them and to reverse our actions." *Id.* at 876. And, although we reaffirmed our intention of calling the Board witnesses at a further hearing, we did not schedule such a hearing pending a further issuance by the Appeal Board. *Ibid.*

We could not at that time hope to, nor did we even attempt to, comply with the standard proposed by the Appeal Board. On the basis of an uncontradicted record (later proven to be unreliable) to the effect that there had been a full disclosure to the Board of pertinent ground motion recorded near the Summer site, that the maximum ground motion recorded was 0.25*g*, that the 0.25*g* reading was an amplification by a factor of 2 of the bedrock motion because of soil and topographical effects, that the H-M adaptation of the Brune model was a reliable formula to determine ground motion which could be relied upon exclusively for that purpose, and that a maximum stress drop of 25 bars could be assumed for that area, we could not hope to demonstrate beyond question that we could not reach an informed decision based upon that evidence. Nor, even though we believed that evidence to be unreliable, did we see how we could apply the other two options proposed by the Appeal Board in its August 27, 1981 memorandum (14 NRC at 1163), to wit:

> 1) simply reject that evidence and decide the issue without regard to it (*i.e.*, on the basis of the other evidence of record); or 2) require the sponsoring party to produce supplemental testimony which is not subject to the same infirmities.

We could not simply reject that evidence, even though we considered it unreliable, because it was uncontradicted and had been reaffirmed repeatedly by the experts. Even if we could reject it, there was no other evidence of record on ground motion on which we could base our decision. Nor were there any "infirmities" that we thought could be cured by the sponsoring party's supplemental testimony. It was, as we had earlier suggested to the Appeal Board, the analysis (*i.e.*, "Staff's review") we thought deficient, not the testimony.

We were not surprised, however, to discover later that each of our concerns on these critical (to the analysis then relied upon) matters was fully justified. Although the magnetic tapes from the USGS instruments had been available to Applicants' experts (and presumably to Staff if it had requested them) through April of 1980 (Tr. 3414-16; Talwani, ff. Tr. 3407, at 2), by the July 16, 1981 hearing session, a significant event that occurred on October 16, 1979 had not been reported to the Board. The accelerometer data from that event indicated that there had been peak accelerations recorded of 0.35*g*, 0.36*g* and 0.18*g* for the two horizontal and one vertical components, respectively, dwarfing the 0.25*g* recording of the August 27, 1978 earthquake that had caused so much concern. The later event was not reported to the Board until we received a "Board notification" from Staff, dated October 20, 1981, following by one day the Appeal Board's Order of October 19, 1981 permitting us to proceed with our calling the Board experts.[11]

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[11] In its ALAB-663, *supra*, fn. 38, 14 NRC at 1157, the Appeal Board refers to this accelerometer data as "new seismic information" that the Staff brought to the Board's attention. The event had occurred more than two years prior to the Board notification and only the USGS's processing and the notification

(Continued)

Moreover, explosive tests and soil modelling by Applicants' experts, testified to during the later hearings in January of 1982, demonstrated that, at the frequency range from 20 to 25 hertz at which the peak accelerations for the August 1978 and October 1979 events had been recorded, there was very little possibility of amplification due to soil or topography. Finds. 36-49. With regard to the stress drop figure to be used in the H-M model, Applicants and Staff calculated stress drops from some of the newly acquired, processed accelerometer records for six events occurring after August of 1978. Using Applicants' root mean square (rms) calculation of stress drops, Staff recalculated stress drops of approximately 12, 19, 23, 42, 7 and 48 bars for the six events. Find. 27. For October 1978 and October 1979 earthquakes, stress drop estimates by Applicants and the Board experts vary from 50 to 65 bars if no amplification of the accelerometer reading is assumed. Find. 29. These calculations contradict not only the "conservative" limit of 25 bars based upon the calculation of 17 bars for the August 1978 event, but also the assumption fundamental to the use of stress drops (and hence the H-M model) to calculate ground motion, that "stress drops appropriate for estimating strong ground motion do not vary over a range of magnitudes." Appl. Ex. 4 at 4. Staff now concludes that 50 bars (the approximate maximum it calculated thus far at Monticello) is the appropriate rms stress drop to be used in estimating ground motion.[12] Staff updated testimony, ff. Tr. 5758, at 33-34. Staff's ultimate conclusion with regard to the H-M model that it is "physically reasonable but needs to be treated with caution" (*Id.* at 35), differs markedly from Staff's original, exclusive reliance upon Applicants' use of that model, of which the Board was so critical, to calculate the zero period acceleration anchor point. At the further seismic hearings in January 1982, Staff's main seismic witness retreated from any reliance upon the H-M model. After hearing the bulk of the seismic testimony, he concluded that it was not possible to come to any definitive results using Applicants' model or to determine which parameters are to be used in applying the model. He recommended that the Board look at other approaches. Find. 28.

Similarly, at the further hearings, Staff concluded that Applicants' response spectra were not appropriate for shallow RIS. Finds. 35, 82.

Although we were not surprised later that the further hearing with the participation of the Board experts thoroughly discredited the analyses of which we had been

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to the Board were new at the time. The unprocessed accelerometer records, which indicated peak acceleration values of 0.35g, 0.33g and 0.15g for the two horizontal and one vertical components, were available long before then. Board notification (BN-81-32), October 20, 1981; Tr. 3415-16.

[12] To avoid confusion, we note that the Brune model is relatively insensitive to changes in stress drop inputs when used to calculate expected magnitudes. Increasing the 25 bars, used by Applicants to arrive at a 5.0 magnitude, to 100 bars, resulted in a 5.3 magnitude, for only a 0.3 difference. Tr. 1230, 5015. However, when used to calculate ground motion, the Brune model is highly sensitive to variations in stress drop as demonstrated by Chinese strong motion figures. For events at the Hsinfengkieng reservoir with calculated stress drops of approximately 10 bars, the peak accelerations were approximately one-half those calculated for the Monticello reservoir at 25 bars. Appl. Ex. 4 at 5, 12. See Tr. 5922.

critical, we were surprised by the Appeal Board's response to our decision to proceed further in calling the Board experts. Although we set forth the basis for our determination in a respectful manner and held our proposed action in abeyance until the Appeal Board could review the matter, the Appeal Board viewed that as an "open and flagrant disregard of . . . [its] instructions," and an uninvited and inappropriate "critique" of its prior memorandum. Order of October 19, 1981, 14 NRC at 1166. The Appeal Board followed with its memorandum of December 14, 1981, ALAB-663, *supra*, in which it viewed us further as having "an apparent and vexatious lack of understanding regarding the relationship of licensing and appeal boards in the administration of this Commission's adjudicatory process." As the Appeal Board explained it (14 NRC at 1149-50), we had disregarded its instructions which it had issued under the authority conferred by Sections 2.718(i), 2.785(a) and 2.785(b)(1), by which the Appeal Board was authorized to direct the certification of questions arising in proceedings before the licensing boards. According to the Appeal Board, it had issued the August 27 memorandum within this adjudicatory framework pursuant to a specific request for relief which the Staff was authorized to make and upon which the Appeal Board was empowered to act. *Ibid.*

Nowhere in this reasoning is there mention of the fact upon which we had relied in our reaffirmation order that, although Staff was authorized to request relief and the Appeal Board was empowered to grant it, the Appeal Board had explicitly declined to exercise its authority within the adjudicatory framework by accepting for ruling Staff's motion for directed certification. Under the adjudicatory framework referred to by the Appeal Board, the Appeal Board can accept a requested certification to review our rulings and in turn be reviewed by the Commission. We did not question that authority. To our regret, we did not know it had been exercised.

Beyond these fundamental matters, we see certain inaccuracies in ALAB-663 that cast us in an unfavorable light. It suggests that we arbitrarily attempted to dictate the methods to be used in the expert reports; that we denied Staff a chance to articulate its reviews; that we did not explain ours; that we decided to call independent experts to review the Staff, rather than the merits of a novel seismological issue; that we singled out the Staff for criticism; that we relied upon inapposite cases; that we misstated the law because we ignored a relevant authority; that we defied the Appeal Board by disobeying a clear order to us; that we professed an inability to handle the merits of the case; and that we forced the Appeal Board to allow us to follow a procedure that is entirely unjustified. We will attempt to clarify the record:

1. We never "declined to permit the Staff to justify its position or explore [any] matter," as stated at 14 NRC 1144. The page (Tr. 3791) cited for that proposition contained a statement, taken out of context, to the effect that we did not care to have the Staff come on "now." The preceding page, Tr. 3790, makes it clear that

we merely wanted to *first* state the Board's position. As we stated there: "We want to discuss what it is that the Board has in mind *and what the parties have to say about it*." (Emphasis added.) The Staff followed the Board's discussion with its own comments at Tr. 3803-05, 3816-17.

2. We never stated that "the Staff should have relied on" certain means and data to determine g values, as also represented at 1144. As the page (Tr. 3793) cited for that proposition indicates, we were not satisfied that the Staff had made a determination of the best means and data to use. We asked Staff to look at other data, but admitted that, with regard to the particular kind of data that we suggested, "Maybe [they are] not good enough data to use." *Ibid.*

3. We never suggested that we intended to defy the Appeal Board and schedule a hearing with the Board witnesses testifying, to which the Staff counsel objected, as the Appeal Board suggests at 1147. Our concern was whether to voluntarily adopt a standard we thought was improper or, as we eventually did, issue an order setting forth what we believe to be proper and give the Appeal Board time to rule on the matter. The discussion with the Staff at Tr. 3888-90 related to whether the Staff could tell us when it would be *prepared* to put its witnesses on *if* the Appeal Board were to give us the green light. Staff took the position that it could not even tell us when it would be prepared until the Appeal Board decided its motion for directed certification. Nowhere did we suggest that we would actually put the witnesses on without first permitting the Appeal Board to render its decision.

4. We never suggested in the record or in any order we issued that the purpose for calling the independent witnesses was to "audit," "pass independent judgment upon," or "apprais[e]" the Staff's review, testimony or evidence, as the Appeal Board states throughout. 14 NRC at 1152, 1155, 1156. We asked the Board experts "to critique the Applicants and Staff's choice of modelling methods and data [*i.e.*, the H-M model and the data inputs to that model] about which the Board had expressed some concern" (Licensing Board Memorandum of August 13, 1981 at 3) — not to critique the Staff. In order to move the proceeding, the Board experts were asked to not begin their analyses from scratch, but to take the record as it then stood. See Tr. 4683-84. Although this procedure has been characterized as "auditing" Staff and questioning Staff's credibility, it was adopted to expedite matters and apparently succeeded in doing so, except for delays caused by Staff and the Appeal Board.

5. We never "professed [an] inability" to decide the merits of the seismic issue, as stated at 1157. As our Memorandum and Order, LBP-81-47, indicates (at 14 NRC 874), because of the burden of proof a Licensing Board can always decide the issue before it on the evidence adduced. Our position was more properly characterized by another statement at 1149 that we had given the "distinct impression" that we could reach an informed decision on the seismic issue. See, also, p. 1155.

6. We never stated that a trial tribunal's decision to call its own expert is "totally beyond appellate scrutiny" or ignored a court case to the contrary, as suggested at 1153. Any time that a party appeals an issue, no matter how flimsy the appeal, it is subject to appellate scrutiny. However, we read the case we supposedly overlooked, *United States* v. *Weathers*, 618 F.2d 663 (10th Cir. 1980) as approving, rather than criticizing, a district court for appointing its own expert. The question before the 10th Circuit was whether the district judge's appointment of the expert established the existence of a reasonable doubt in the judge's mind of the criminal defendant's sanity. The Court of Appeals upheld the trial court and held that it did not. In a footnote, the Court of Appeals commented on the fact that, although the judge did not follow the prescribed procedures under Rule 706 of the Federal Rules of Evidence, this did not affect its decision affirming him. While Rule 706 does not directly apply to us, we believe that we have substantially complied with it. See Tr. 3814.

7. We did not cite *Public Service Co. of Oklahoma* (Black Fox Station, Units 1 and 2), LBP-78-26, 8 NRC 102 (1978) with regard to the calling of an NRC Staff geologist or the Oklahoma officials, as the Appeal Board believes at 1153, but with regard to U.S. Army Corps of Engineer witnesses, whom we understand were called as independent Board witnesses.

8. We did not purposely ignore a material difference between this case and *Diablo Canyon*,[13] *Seabrook*,[14] *Midland*,[15] and *San Onofre*,[16] to wit, that in those cases the Board called witnesses that the intervenors wanted to have heard. 14 NRC at 1154-55. We believed that element of those cases to be a *negative* factor in weighing the propriety of calling the experts because it implied the Boards' use of this device to circumvent the prohibition on offering financial assistance to intervenors. It was despite this element that the Boards' decisions to call the experts as Board witnesses were considered proper — because the Boards *themselves* wanted to hear the witnesses. We considered our case as stronger, not weaker, because of the difference.

9. We never abandoned our position that there were deficiencies in the Staff's seismic review, contrary to the Appeal Board's "reasonable inference" that we had. 14 NRC at 1151. Although we referred to Staff's seismic experts in LBP-81-47 as "highly competent and credible," we indicated that their expertise did not extend to the "highly complex modelling required . . . in this unique situation involving extremely shallow reservoir-induced seismicity in the Eastern United

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[13] *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-644, 13 NRC 903 (1981).

[14] *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-667, 15 NRC 421 (1982).

[15] *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603 (1977).

[16] *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-3, 15 NRC 61 (1982).

States." *Id.* at 868-69. We did not wish to be drawn into insulting Staff's experts in order to justify our calling Board experts.

10. We see nothing in LBP-81-47 which could justify the Appeal Board's suggestion that we might not have fairly appraised the evidence before us if we had been ordered not to call the Board experts. ALAB-663, *supra*, at 1158. Although it may appear otherwise from ALAB-663, the tenor of our issuance was respectful— to both Staff and the Appeal Board. We do not consider a public expression of intellectual disagreement with what we believed to be a suggested standard and a skepticism about the reliability of certain expert testimony (which later proved false), to warrant questioning the integrity of this Board. If the Appeal Board believed that its new standard for calling Board experts was proper and would survive a direct challenge before the Commission and the courts, it could have reversed us with the full confidence that we would carry out its orders, fairly and to the letter, as we had indicated we would (14 NRC at 875, 876).

In the final analysis, we see only two matters discussed in the Appeal Board's December 14, 1981 memorandum as offered in support of the statement in the Order of October 19, 1981 that there had been an "open and flagrant disregard of [Appeal Board's] instructions": 1) that we intended to defy the Appeal Board by scheduling a hearing with the Board witness testifying, of which we have demonstrated there is no record support (see numbered paragraph 3 above); and 2) that this Board "set forth . . . virtually no explanation respecting why an informed decision on the seismic issue could not be reached on the basis of testimony of the parties." 14 NRC at 1149. Considering that the Licensing Board had stated that "we cannot . . . claim to have satisfied the new standard" of demonstrating beyond question why we could not reach an informed decision (LBP-81-47, *supra*, at 874), we do not see how we can be faulted for not offering those non-existent reasons.

In our opinion, there is a wide area between "the most extraordinary situation in which it is demonstrated beyond question that a Board cannot otherwise reach an informed decision on the issue involved" and "intuition and vague doubts about the reliability of the Staff's presentation" (ALAB-663 at 31), into which this case (and probably every other case in which a Board is not satisfied with uncontradicted expert testimony) falls. Here, we were skeptical of the evidence adduced with regard to the completeness of the accelerometer information, soil and topographical amplification of accelerometer readings, the reliability of the Brune model, and the data inputs to the model (primarily the stress drop limitation of 25 bars), and had expressed our skepticism repeatedly throughout the testimony in the form of persistent and critical Board examination.[17] Our skepticism was not borne of

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[17] See Board Finding 15, *supra*, for a discussion of, and record citations to, the extensive questions raised by the Board regarding Applicants' ground motion model.

"intuition and vague doubts," but, rather, was based upon the many years of experience and training that led us to question whether the testimony on these matters was complete and reliable, and could be improved by these same witnesses. We did not see then, nor do we see now, how these concerns could have been articulated in the context of the interlocutory posture of the case and the uncontradicted testimony with which we were not satisfied. Although even a close reading of the transcripts would lose some of the flavor of the actual hearing, we urged the Appeal Board "to consider the Licensing Board's decision to call expert witnesses in the context of the live facts of this case, as would be disclosed by its reading the transcript of hearing." LBP-81-47 at 875. That the critical matters testified to proved unreliable, thereby confirming our initial skepticism, does not surprise us. We still believe that if the Appeal Board had relied less upon the allegations of Staff concerning our actions, and more upon the evidentiary record, "it would [have] reconsider[ed] proposing [its] new standard and would [have] affirm[ed] this Board." *Ibid.*

On June 11, 1982, the Commission voted not to review ALAB-663, and issued separate views of certain Commissioners.[18] CLI-82-10, 15 NRC 1377. We wish to clarify a matter discussed in the separate views of a Commissioner regarding the opinion of the Chairman of the Licensing Board Panel on the Licensing Board's motivation for calling its own witnesses. In our view it would have been improper for the Licensing Board to have discussed its motivation with the Panel Chairman or any other person not on the Licensing Board. The Panel Chairman's impression of the Licensing Board's views in the matter referred to was undoubtedly based upon the views we expressed in LBP-81-47, 14 NRC 866, 874 (1981), regarding the Appeal Board's new standard — not upon any personal discussions with us. A close reading of our discussion in LBP-81-47, *supra,* at 874, however, would indicate an agreement with the Commissioner's position that if the applicant, who has the burden of proof, cannot establish the safety of the plant, a licensing board must deny the operating license — not resurrect it through calling its own witnesses. We also reiterate for that Commissioner our view, as fully discussed above, that we did not disregard the Appeal Board's directives.

We also submit that our actions were consistent with the separate views of another Commissioner that the Licensing Boards should not conduct an independent technical review and should resolve the issues in dispute using first the resources of the parties. We are certain that on reading the complete record the

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[18] Undoubtedly the Commission is aware that a failure to review an interlocutory matter does not close the issue. Even Commission *action* on an interlocutory matter is only a final disposition if the Commission so desires. As a fundamental legal principle, all interlocutory matters, whether or not ruled upon, are subject to review at the time an appellate body reviews the final decision. Especially in this case, where the Appeal Board *accepted* the decision of the Licensing Board to call its own witnesses, albeit reluctantly, a Commission decision *not* to review the ruling need only be considered tentative by the Commission. The Commission may wish to review the question of our calling independent witnesses on a complete record, while reviewing the initial decision.

Commissioner will recognize the concerted effort made by the Licensing Board to ascertain the validity of Applicants' ground motion model and the parameters utilized therein, through repeated questioning of Applicants' and Staff's witnesses, before we resorted to calling independent Board witnesses. That Staff's further testimony filed on September 15, 1981 again attempted to justify the ground motion model and parameters, which later proved to be so unreliable, can only confirm the correctness of the Licensing Board's contemporaneous opinion that there was nothing further to be gained by continued reliance upon Applicants' and Staff's witnesses in that regard.

Cite as 16 NRC 281 (1982) **LBP-82-56**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Ivan W. Smith, Chairman
Dr. Walter H. Jordan
Dr. Linda W. Little

In the Matter of

Docket No. 50-289
(Restart)

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit 1)

July 27, 1982

The Licensing Board issues its third and concluding partial initial decision which resolves the special restart proceeding in favor of restarting TMI Unit 1 subject to certain recommendations, conditions and a monetary penalty.

Technical issues discussed: utility's responsibility to train and examine candidates for NRC operator licenses; utility's responsibility to certify only competent candidates for NRC operator licenses; standards for maintaining and renewing operator licenses; the NRC operator licensing responsibilities; auditing of utility's operator training and examination program; the method of validating NRC operator license examination for specific plants; proctoring and grading NRC operator licensing examinations; quality assurance applied to training and testing operators; redundant assurance of reactor operator competence; reactor coolant chemistry; reactor coolant pump bearing and seals.

LICENSING BOARD: SPECIAL MASTER

Licensing Board appointed Special Master pursuant to 10 CFR 2.722(a)(2) and specified issues to be heard by Special Master.

LICENSING BOARD: SPECIAL MASTER

Licensing Board adopts as its own the evidentiary record made before Special Master.

LICENSING BOARD: SPECIAL MASTER

The Board, not the Special Master, is authorized by Notice of Hearing, regulations and statute to render Administrative Procedure Act initial decision. Special Master's report is advisory only. Board must render decision based on its own understanding of the reliable, probative and substantial evidence.

LICENSING BOARD: SPECIAL MASTER

Licensing Board affords weight to Special Master's reported direct observations of witness demeanor; but where Special Master's conclusions are materially affected by witness demeanor, Licensing Board must give especially careful consideration to whether or not other more objective witness credibility standards are consistent with Special Master's conclusions.

LICENSING BOARD: SPECIAL MASTER

Where inferences and factual conclusions depend upon the ethical orientation and expectations of the fact-finder, Licensing Board relies upon its collegial judgment but accepts Special Master's conclusions as informed advice.

LICENSING BOARD: SPECIAL MASTER

Results of hearing before Special Master and its effect upon the entire proceeding before the Board are exclusively within the jurisdiction of the Board *vis-a-vis* the jurisdiction delegated to the Special Master.

LICENSING BOARD: JURISDICTION

Licensing Board does not endorse Special Master's recommendation that NRC examination cheaters be referred for criminal prosecution, because criminal prosecution has not been shown to relate to jurisdiction granted by Notice of Hearing.

LICENSING BOARD: JURISDICTION

Licensing Board has no jurisdiction and authority to direct the NRC Staff to conduct future investigation into alleged false material statement under ruling of *Carolina Power and Light Company* (Shearon Harris, Units 1-4), CLI-80-12, 11 NRC 514 (1980).

LICENSING BOARD: JURISDICTION

Although not presiding over a proceeding noticed as a civil penalty case, Licensing Board nevertheless imposes a monetary penalty on licensed utility of $100,000 for negligent failure to safeguard the integrity of the utility's operator examination process, failure to instill an attitude of respect for the utility- and NRC-administered examinations, failure to assure the quality of operator training instruction and negligence in the certification of candidates for NRC operator licensing. Board's jurisdiction to impose monetary penalty flows from authority set out in Notice of Hearing to require long-term measures necessary to provide reasonable assurance that Three Mile Island Unit 1 can be operated without endangering the public health and safety.

LICENSING BOARD: JURISDICTION

Upon issuing a partial initial decision, Licensing Board retained jurisdiction over a portion of the subject matter of that decision because of new information on cheating on the NRC operator licensing examination.

EVIDENCE: HEARSAY

NRC investigator's testimony that operator licensing examination candidate told him that another operator licensing examination candidate attempted to cheat, particularly in light of uncertain memories of investigator and the informing candidate, is unreliable hearsay.

EVIDENCE: HEARSAY

Rumors that an employee of Licensee cheated are the worst kind of hearsay (*United States* v. *Mandel*, 591 F.2d 1347 (4th Cir. 1979); *cert. denied*, 100 S. Ct. 1647; 445 U.S. 961; 64 L. Ed. 236 (1980)) and not worthy of evidentiary weight as to the truth of the rumors. Rumors may be considered, however, in assessing thoroughness of investigation and may be pursued in the interest of a complete evidentiary record.

EVIDENCE: INFERENCES

The Board finds that it is fair to draw an inference unfavorable to a suspected cheater where, as a voluntary witness, suspected cheater alone has solution to mystery surrounding his activities and fails to explain his activities despite opportunity to do so.

ATOMIC ENERGY ACT: FALSE MATERIAL STATEMENT

Certification to the NRC's Operator Licensing Branch that licensed operator has requalified based upon the known improper assistance of another operator is a false material statement under the Atomic Energy Act.

ADMINISTRATIVE DUE PROCESS

Licensing Board finds that two licensed operators cheated on company-administered license qualification examination but, because operators have not had notice of charges against them or opportunity to confront evidence because of sequestration, no action may be taken against their personal operator licenses without further proceeding. However, findings that the operators cheated are findings against the licensed utility.

APPEARANCES

Licensee, General Public Utilities Nuclear Corporation:
George F. Trowbridge, Ernest L. Blake, Jr., Bonnie S. Gottlieb, Deborah B. Bauser, Esquires, Shaw, Pittman, Potts & Trowbridge

Nuclear Regulatory Commission Staff:
Jack R. Goldberg, Lucinda Low Swartz, Mary E. Wagner, Daniel T. Swanson, Esquires

Commonwealth of Pennsylvania:
Robert W. Adler, Esquire

Three Mile Island Alert, Inc.:
Ms. Louise Bradford, Ms. Joanne Doroshow, John Clewett, Esquires

Mrs. Marjorie M. Aamodt and **Mr. Norman O. Aamodt**, *pro se*

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PARTIAL INITIAL DECISION
(Reopened Proceeding)

I. BACKGROUND AND INTRODUCTION

2029. In its August 9, 1979 Order and Notice of Hearing, the Commission directed that Three Mile Island Unit 1 (TMI-1) remain shut down until a hearing can be conducted by this Atomic Safety and Licensing Board to determine whether there is reasonable assurance that the facility can be operated without endangering the health and safety of the public in view of the March 28, 1979 accident at TMI Unit 2. CLI-79-8, 10 NRC 141. Following the mandated hearing the Board issued two partial initial decisions (PIDs) favoring the restart of TMI-1 subject to certain conditions. However, in the PID of August 27, 1981 (LBP-81-32, 14 NRC 381, 402-03) and again in the PID of December 14, 1981 (LBP-81-59, 14 NRC 1211, 1707-11, we retained jurisdiction over issues pertaining to the quality of Licensee's management and its operating personnel because there had been cheating on an NRC operators' licensing examination. This partial initial decision disposes of that matter and related issues. It is the concluding portion of the Board's initial decision in this proceeding.[226]

2030. Immediately prior to issuing the partial initial decision of August 27, 1981 we had received several notifications from the NRC Staff providing the results of an investigation by the Office of Inspection and Enforcement (OIE) into allegations of cheating by two TMI-1 shift supervisors on the April 1981 NRC Senior Reactor Operator examinations. The reports also raised questions concerning the adequacy of the proctoring of NRC-administered examinations. We noted that the OIE investigations raised questions affecting the issues decided in the August 27 PID, but we nevertheless issued that decision so that, *inter alia*, the Commission could monitor further developments in the context of their relevance to this proceeding. 14 NRC at 405.

2031. Later the Licensee also brought to the Board's attention its own concern about "several cases of strong parallelism" in answers on some Licensee-administered examinations and suggested that the Board might therefore wish to reopen the evidentiary record.[227]

2032. On October 2, 1981 we reopened the evidentiary record to inquire into the matter and appointed Administrative Judge Gary L. Milhollin Special Master to preside over the hearing pursuant to 10 CFR 2.722(a)(2). Judge Milhollin was assigned the authority to inquire into twelve specific issues under the following broad issue:

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[226] The Board had also retained jurisdiction to consider motions by intervenors Union of Concerned Scientists and Steven Sholly to reopen the record of some facility modification, design and procedures issues. 14 NRC at 1222. The Board denied the motions in its order of April 26, 1982. Also carried over from the earlier partial initial decisions was the Board's consideration of how to implement the terms and conditions upon which it found that the TMI-1 may be restarted. 14 NRC at 1420. On April 5, 1982 the Board issued an order modifying and approving an implementation plan proposed by the NRC Staff. The cheating issues decided here are the only items remaining within this Board's jurisdiction.

[227] Licensee's September 8, 1981 response to a Board order relative to the cheating investigation.

> . . . the effect of the information on cheating in the NRC April examination on the management issues considered or left open in the Partial Initial Decision, recognizing that, depending on the facts, the possible nexus of the cheating incident in the NRC examination goes beyond the cheating by two particular individuals and may involve the issues of Licensee's management integrity, the quality of its operating personnel, its ability to staff the facility adequately, its training and testing program, and the NRC process by which the operators would be tested and licensed.[228]

2033. Pursuant to the Board's directions, Judge Milhollin conducted an extensive evidentiary hearing in the reopened proceeding. On April 28, 1982 he submitted his Special Master's report to the Board. He has thoroughly explained the procedural background of the reopened proceeding and the particular issues considered by him and we will not restate them here.

2034. In this decision we adopt the evidentiary record made in the proceeding before Judge Milhollin as a part of the evidentiary record of the main proceeding. We also adopt major portions of his report as our own decision. The Board selected Judge Milhollin to be the Special Master in the reopened proceeding because of our informed confidence in his ability and fairness. Judge Milhollin is a Professor of Law at the University of Wisconsin Law School. We believe that his familiarity with education and examinations at a high academic level affords him special insight into the issues of cheating on the NRC and company-administered operator examinations and with the associated training programs. His report is thorough, well-reasoned and carefully documented. It reflects the care and thoroughness with which he conducted the hearing and weighed the evidence. We have evaluated it against our own review of the entire evidentiary record of the reopened proceeding and in light of the proposed findings submitted to him by the parties. We have also carefully considered the comments on his report made to us by the parties. His report is entitled to great weight. Accordingly we have organized our decision in the same manner so that a precise comparison can be made.

2035. In deciding how much weight to be afforded to the Report we have been guided by the overriding principle that this Board alone is authorized by statute, regulation and the notice of hearing to render the initial decision in this proceeding. Moreover, we must render this decision upon our own understanding of the reliable, probative and substantial evidence of record. We do not sit as a review board with respect to the Special Master's report, but as the initial decider. The regulations under which a Special Master may be appointed in NRC proceedings specifies that the reports are advisory only. 10 CFR 2.722(a)(3).

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[228] Unpublished memorandum and order of October 14, 1981, at 2.

2036. There is a subtle and sensitive relationship between the Board with its responsibility as the initial decision maker, and the Special Master as the official who received the evidence. We have identified the need for and have employed guidelines for considering the advice to the Board embodied in the Special Master's Report. Witness credibility depends most often on the substantive content of the witness' testimony, the witness' qualifications, perceived self-interest biases, and opportunity to be informed, or other objective standards. Sometimes, however, Judge Milhollin has judged credibility in part by his observation of the demeanor of the witnesses at the hearing. This reopened proceeding is unusual in NRC hearings in that it concerns suspicions of ordinary human deceit. Fortunately Judge Milhollin has very carefully noted when witnesses' demeanor is important to his conclusions. While of course we would afford some special weight to Judge Milhollin's direct observations of witness demeanor, where his conclusions are materially affected by witness demeanor, we have given especially careful consideration as to whether or not other, more objective credibility criteria are consistent with his conclusions.

2037. The Board has independently arrived at its own factual conclusions notwithstanding some conclusions to the contrary by Judge Milhollin because, as noted above, it is simply our job to do so. Moreover, some of the inferences and conclusions depend upon the judgment and the ethical orientation and expectations of the fact finders. This is particularly true where the issue is whether the evidence points to "cooperation" (Judge Milhollin's euphemism for bilateral cheating). Where judgment is material to a particular conclusion, we rely upon our collegial consensus. Nevertheless we have considered Judge Milhollin's conclusions as informed advice to us.

2038. We deem the results of the reopened proceeding and its effect upon the balance of our initial decisions to be matters entirely within our province *vis-a-vis* the jurisdiction delegated to Judge Milhollin. In our findings and conclusions of fact below, sometimes we specifically adopt or reject Judge Milhollin's findings, but on some occasions we have made our own findings directly from the evidentiary record without regard to Judge Milhollin's findings. Most of the company personnel involved in the proceeding are referred to by letter designations to protect their privacy.

II. SUMMARY OF DECISION

A. Extent and Consequences of Cheating

2039. Four cheaters have been positively identified. O and W are shift supervisors whose cheating on the April 1981 NRC operators license examination gave rise to the need to reopen the record. We find also that G and H, non-supervisory licensed reactor operators, cheated on company-administered requalification examinations. In addition, the plant operating engineer, Mr. Shipman, admitted that he spontaneously provided an answer to an unidentified NRC examination candidate during the April 1981 exams. It is probable but not conclusive that yet another candidate may have duped WW, a shift technical advisor, into providing information useful on a company-administered examination.

2040. We also find that GG, a shift foreman, probably aided his supervisor, W, on a company exam. Mr. U, also a shift foreman, escapes censure and sanction for attempting to facilitate cheating because too many doubts surrounded the several episodes involving him. A shift technical advisor, MM, had answers suspiciously parallel to those of GG and W on one examination but the Board has not found him culpable. Mr. Husted, a licensed operator training officer, was also accused of attempting to cheat but we conclude that those charges were unsupported. And finally, in an episode without direct relevance to this proceeding, we find that VV, who was at one time Unit 2 supervisor, cheated by turning in O's work as his own in a requalification quiz in 1979, and that the TMI Station Manager, Gary Miller, falsely certified VV for license renewal despite VV's cheating.

2041. Any cheating with respect to reactor operator licensing is, of course, too much. But our warrant is to determine whether the cheating presents a threat to the public health and safety, not to sit in ethical judgment on those involved. Thus our central concern is what assurance is there that the problem has been bounded and what are the consequences of the identified cheating. Unless it were possible to know from an independent source the total extent of cheating expected to be found it would not be possible to determine whether the reopened proceeding exposed all of it. We cannot, therefore, conclude with certainty that all possible cheating has been revealed. However we are comfortable with the results of the inquiries and believe that it is probable that almost all, perhaps all, of the cheating of any important relevance to this proceeding has been identified.

2042. We based this opinion on two sets of circumstances. First, the hearing itself was a form of investigation. Two very active intervening parties had interests adverse to the Licensee. The Commonwealth of Pennsylvania was also very active and objective. The NRC Staff exercised its responsibilities. These parties and the Special Master have all collectively analyzed and reanalyzed the written answers to the relevant NRC and company-administered examinations. In addition, outside consultants employed by the Staff and the Licensee have reviewed the respective answers. Although we criticize some aspects of the Licensee's investigation, we believe that Licensee sincerely tried to uncover and report every instance of cheating. The Board itself has searched the answers for additional evidence of cheating. We believe that every suspicious parallelism has been identified and the respective authors confronted. Only a few parallelisms remain unexplained. All others have either been explained by memorization of common training materials, such as the case with S and Y, or by cheating.

2043. The second indicator of thoroughness is the testimony of the operators. They testified under a sequestration order, *i.e.*, they were excluded from the hearing room when not testifying and not permitted to share information with other witnesses. As we would fully expect, the company witnesses generally did not point accusing fingers at each other. What is significant, however, is that the witnesses were willing to recount "rumors" about cheating or, as in the case of U, offers of aid in cheating. This "rumor" testimony became repetitive and was finite. The rumors were pursued by the litigating parties and Judge Milhollin. Thus we believe that the examination candidates themselves reported as "rumors" most or all of the cheating that was obvious enough to be observed. Our attention has been drawn to the cheaters. But the point too easily overlooked in this proceeding is that some thirty to forty licensed members of the TMI-1 operating staff did not cheat, even though they easily could have — particularly on the company-administered requalification exams. We have not adopted the Special Master's finding (Report at ¶325) that the ". . . overall integrity of the operations staff has been found to be inadequate." To the contrary, our overall impression is that, as a group, they have performed well under very demoralizing and stressful circumstances.

2044. The intervening Aamodt family suggested that a search for parallelisms would not reveal all instances of cooperation in that the candidates may merely have exchanged the ideas underlying the answers, therefore more cheating must have occurred. This tends to be a philosophical argument which we have not accepted. There is no warrant to assume that the candidates cheated simply because the opportunity existed. In the case of the company-administered examinations the better assumption is that rational candidates would use the qualification exams as a preliminary test of their ability to pass the NRC operators' licensing examinations. Their jobs depended upon it. This reasoning would not prevail with respect to the NRC examinations however. But as a result of the cheating on the April 1981 NRC licensing examination, each of the candidates was reexamined in October 1981 under the most strict and reliable testing procedures ever employed by the NRC.

2045. We see no safety consequences resulting from the cheating episodes. The results of the October 1981 NRC licensing reexamination have not been received into evidence although they were served upon the Board and parties. It appears that enough candidates to staff the plant have survived, but we have not, for want of information, analyzed all aspects of present staffing plans. It is sufficient that Licensee's management has reconfirmed its commitment to abide by License Condition 9 imposed by the Board in its first Partial Initial Decision. Licensee Proposed Finding ¶408. Condition 9 details the staffing requirements for TMI-1. *See* 14 NRC at 580-81. We expect that condition to be enforced, and if it is, there will be no adverse operating safety consequence flowing from the actions of those candidates who cheated on the examinations.

B. Management's Involvement in Cheating

2046. The Special Master concluded that Michael Ross, TMI-1 Manager of Operations, deliberately prevented proctoring during the April 1981 NRC licensing examinations. He also found that Mr. Ross improperly and in bad faith induced or attempted to induce the NRC licensing examiner to broaden the answer keys on that exam so that he, Ross, and other test candidates could unfairly attain enhanced scores. The Board, however, comes to the opposite conclusion. We find that the accusation that Mr. Ross impeded proctoring was incredible and that the accusor's testimony on that issue was unreliably ambiguous. There were two examination questions giving rise to the charge that the respective answer keys were improperly broadened. Our own analysis of the changes proposed by Mr. Ross convinced us that, on one question, the change was arguably correct and, on the other, the proposed change, although not literally correct, was not unconscionable and could not be attributed to bad faith. Mr. Ross was the highest-level member of TMI-1 management whose ethical conduct was questioned, and we conclude that all of the charges against him were unfounded.

2047. Mr. Shipman, the plant operating engineer, came forward with information that, during the April 1981 NRC examination, he spontaneously provided a short answer to one of the candidates. Mr. Shipman is an important member of the TMI-1 management. He has been reprimanded by Licensee for his role in that episode. Neither Judge Milhollin nor the Board regarded Mr. Shipman's intent to be cheating. However we find that his testimony denying that he recalls the identity of the involved test candidate is probably not truthful, but the inference that he is untruthful is not so persuasive as to warrant additional sanctions against him. It was also significant that as a result of this incident there remains an unidentified cheater on the TMI-1 operating staff. And it is particularly noteworthy that the cheater apparently felt free to ask a member of management to assist him on the examination. As a result the Board was especially concerned as to whether there was evidence that Licensee's management condoned or aided cheating. There were also rumors that U, a shift foreman, was stationed by management to aid the candidates in the April 1981 NRC examinations, but the Board's conclusion is that if U in fact did offer aid on that examination, it was his own undertaking. We find no evidence that Licensee's management encouraged or condoned cheating on the relevant NRC or company-administered examinations.

2048. A possibly serious reflection on the integrity of Licensee's management centered around an episode without direct relevance to the cheating related to the reopened proceeding. In 1979 Mr. John Herbein was a Metropolitan Edison Company vice president, Mr. Gary Miller was the Three Mile Island Station manager, and VV was the Supervisor of Operations for Unit 2. We found that in 1979 VV tried to pass his operator's license requalification test by submitting the work of O as his own. With definite knowledge that this was the case, Mr. Miller, with the informed assent of Mr. Herbein, certified to the NRC's Operator Licensing Branch in August 1979 that VV had requalified as a reactor operator. This certification was based in part upon the score achieved by VV with O's assistance. We have concluded that this certification is a false material statement, and that Mr. Miller's testimony does not satisfactorily explain his actions. The Board has recommended an investigation.

2049. Subsequently Mr. Herbein became the Vice President of the General Public Utility Nuclear Corporation's Nuclear Assurance Division but recently was transferred from GPU Nuclear to a non-nuclear assignment. Mr. Miller is now the GPU Nuclear Director of Startup and Testing and the Board has imposed a condition limiting his activity at TMI-1 until the matter can be resolved. VV no longer performs licensed activities and has not held a Unit 1 license during the times relevant to this proceeding.

2050. The information concerning VV and his certification to the NRC was first brought to the attention of the NRC at the direction of Robert Arnold, President of GPU Nuclear Corporation. We believe that it is representative of the Licensee's efforts to make a full disclosure on all matters of possible relevance to the cheating incidents. We have also found that Licensee's handling of the matter with respect to VV was satisfactory. However, there was no evidence presented as to whether the Licensee has taken, intends to take, or should take any personnel action against any other employee involved in the certification incident.

2051. The reopened proceeding produced no other evidence of management involvement in cheating.

C. Licensee's Response to the Cheating

2052. Licensee responded to the cheating revelations by investigating the circumstances surrounding the cheating on the NRC examinations, investigating its own company-administered examinations, disciplining errant employees, meeting with and explaining to employees the company's policy on training and testing integrity, upgrading its procedure for certifying license candidates to the NRC and by participating in this proceeding. The Licensee also has made major changes in its company training and testing program, a response which we discuss separately below.

2053. In its investigation of the cheating incident the Licensee concentrated on possible cheating on its own initial qualification and requalification examinations. We have evaluated this investigation as to whether it was well conceived, whether it was pursued with sufficient resources and good intentions, whether it was properly executed, and whether it was successful. In general we believe the Licensee conducted an adequate investigation.

2054. Licensee employed two technical consultants from Pennsylvania State University, Harrisburg Campus, to analyze for suspicious parallelisms the answers given on its company-administered examinations. Licensee assigned a company attorney, Mr. John Wilson, and his associate to investigate the parallelisms identified by the technical consultants. The investigation also involved the very active participation of GPU Nuclear President Robert Arnold, GPU Nuclear Vice President for TMI-1 Henry Hukill, and GPU Nuclear Vice President Richard Wilson. The participation of these high-ranking officials imparted prestige and force to the inquiry, and we assume that it demonstrated to the operating staff of TMI-1 the fact that management regarded the matter to be important. We found no evidence that Licensee stinted on the resources expended in the investigation. In general we concluded that the investigation was well designed and had sufficient resources allocated to it. However, we faulted the Licensee for not having a single official or clearinghouse responsible for overseeing the thoroughness of the inquiry.

2055. We are also critical of the execution of the company investigation, particularly the inquiry by the attorney, John Wilson. He was naively convinced that G and H did not cheat, he was insufficiently formal in his interviewing of the candidates, he did not employ technical assistance in assessing the explanations given by suspected cheaters. Apparently because of insufficient direction, some investigatory leads were not pursued. We also criticize the Licensee for deferring to and relying upon the NRC to investigate some of the leads, because we believe that the Licensee had its own responsibility to explore every promising lead. However, we recognize that time was limited. After the hearing began a sequestration order was in effect, and no further investigation of company personnel was feasible. Moreover, we recognize that not all possible leads could be pursued nor their significance promptly appreciated. Our criticism has had the benefit of looking back over a very large evidentiary record where weaknesses have been highlighted by the parties and the Special Master.

2056. Our major criticism of the execution of Licensee's plan of investigation was that higher-ranking company officials uncritically accepted the results of the investigation by the attorneys. We believe that a competent technical reviewer would not have been convinced by G and H that they did not cooperate on the company-administered examinations. However, we cannot find that Licensee's investigation was unsuccessful. After a thorough scrutiny by the parties at the proceeding, Judge Milhollin, and after our own review, only a few additional suspicious parallelisms were identified beyond those disclosed by the Licensee's Penn State technical consultants.

2057. Licensee also responded to cheating by taking appropriate personnel action. It requested and received the resignations of O and W; placed a letter of reprimand in Mr. Shipman's personnel file; removed VV from supervisory and licensed duties in an action that has functionally demoted him. Licensee took the position at the hearing that G and H did not cheat and, while we question the logic of that stand, we do not question its sincerity. Therefore Licensee has taken no action adverse to G and H, a matter which we address below under our discussion of remedies. In instances where the Board itself finds the evidence inconclusive as to a particular employee, such as in the case of U, we cannot fault Licensee's management for not taking personnel action. In general we have concluded that where Licensee has seen the need and the justification for personnel action, it has taken it. However, as we have noted elsewhere in this decision, the record is silent as to whether the Licensee has taken or should take any personnel action as a result of the improper certification of VV's requalification to the NRC in August 1979.

2058. Either Mr. Arnold or Mr. Hukill, sometimes both, have met with all members of the TMI-1 operating staff, all together, by shift, and individually, in a discussion of cheating, and by written directions management has attempted to explain why, over the resistance of the operators, objective written assurance of operator competence is essential. Widespread resentment toward the need for reexaminations of TMI operators prevailed. The Board has no way of knowing whether this resentment continues. If Licensee continues to monitor the situation, we can think of no further helpful efforts, except as we note below, to bring this aspect of the proceeding to a fair and prompt conclusion.

2059. Licensee had in its possession sufficient evidence that O and W, and in our view, VV, should not have been recertified for licensing and concedes that it can be legitimately criticized for not having a formal process and a written procedure for operator qualification certification. The Board finds that the Licensee was negligent in its operators' license certification procedures. Licensee has now committed itself to establish such a procedure, including a written statement from the training department, which we believe will foreclose the certification of technically incompetent candidates, and those known to be ethically unqualified, for operator licenses. This conclusion depends, of course, upon our confidence that the present management of TMI-1 would carefully follow its formal certification procedures.

2060. It is also the Board's view that the Licensee has cooperated fully in the reopened proceeding. While we disagree with the Licensee in several areas, in general Licensee has recognized and candidly conceded the weakness of some of its programs, particularly in training. It readily produced its employees for examination by the parties, and we could discern no reluctance to come forward with all relevant information. In fact, the episode involving the requalification certification of VV arguably need not have been revealed by Licensee in this proceeding because it is only indirectly related to its subject matter. We have discounted the allegation that company management attempted to interfere with the NRC investigation by seeking to be present during employee interviews. We found, rather, that management had a legitimate purpose in trying to be present; the company's legitimate purpose and the NRC's purposes conflicted, but the matter was appropriately resolved.

D. Management's Responsibility for Cheating; Training and Testing Program

2061. The reopened proceeding was not intended to relitigate the substantive quality of the Licensee's training program, *i.e.*, the course content, nor has the evidence brought its adequacy into question. The official NRC operators' licensing exam continues to be the principal test of operator competence and the adequacy of the company's operator training program.

2062. The reopened proceeding was concerned first with the adequacy of the company's attitude and administrative procedures to guard against cheating, and, second, a closely related subissue — whether the instruction methods were a contributor to the cheating.

2063. The evidence is undisputed and Licensee admits that the Licensee's past testing procedures were loose; there were no established procedures to assure that exams and quizzes were administered properly. It was not clear to the operators that cooperation on quizzes was not acceptable. No specific instruction not to cheat was given. Proctoring was uneven, frequently very poor. The use of unproctored, take-home exams permitted cooperation. Sometimes instructions were unclear as to whether quizzes were to be open- or closed-book. Some quizzes actually were answered as a group effort in that the concept of working as a crew was encouraged. Licensee has made an unusually open and candid acknowledgment of its responsibility and fault for the cheating on the examinations. Management simply did not think to institute procedures and other administrative safeguards for guarding against cheating on exams. Moreover, Licensee was culpably negligent in failing to install in its operating staff a sense of respect for its training and testing program. This admission is not only forced by the facts, but, in our view, the admission itself is a necessary foundation for any confidence that the TMI training and testing program will be brought to an acceptable quality.

2064. Mr. Hukill, Vice President of TMI-1, stated the reaction of company management rather well in his testimony. He admits to feeling somewhat naive, and in view of his position as the senior person at TMI-1, he accepts the responsibility for the cheating. He explained that, as a graduate of the Naval Academy and after many years on active Navy duty, mostly with nuclear power and submarines, an understanding of the absolute need for total honesty and trustworthiness has been ingrained in him; that in the Navy the safety of the ship and crew depended upon honesty and integrity. Mr. Hukill came to TMI-1 assuming that the people there were trustworthy. Hukill, ff. Tr. 23,913, at 2-4.

2065. Mr. Arnold, President of GPU Nuclear, points out that his management must and does inherently rely on the honesty of others, and that he has assumed a basic honesty in his operators, an assumption which, despite the cheating events, has been justified by his experience, and which prevails today. Arnold, ff. Tr. 23,580, at 4.

2066. The Board recognizes that trust in the integrity of others is an essential part of every complex undertaking in our society, but we also believe that Licensee correctly understands that its management was naive and negligent in not guarding against cheating in its training and testing program. We also recognize that trustworthy persons tend to be more trusting of others, and we make no conclusions of bad faith or inherent incompetence in upper-level TMI-1 management from the cheating episodes.

2067. Operator requalification and testing was required by Short Term Item 1(e) of the Commission's August 9, 1979 notice of hearing in this proceeding. 10 NRC at 144. Satisfactory retraining and testing was an essential predicate to the Board's conclusion that the TMI-1 can be restarted without unreasonable risk. In our decision below, we score the Licensee severely for suggesting that it never represented to the Board that consideration had been given to establishing procedures against cheating, thus there is no unfulfilled promise to establish testing administrative procedures. We find that the assurance of testing integrity had been implicit if not explicit during the main hearing.

2068. The Board is now satisfied that the administrative procedures now in place, as supplemented by an additional Board-imposed requirement, are well designed to protect the integrity of the company-administered examinations. They must be enforced, however; thus we are not satisfied that the new procedures alone are adequate. Therefore, we impose an additional condition on restart of TMI-1 which requires an independent auditing of the requalification and testing program during a two-year "probationary" period; internal auditing procedures at the point of training delivery; and the establishment of criteria for the qualifications of training instructors.

2069. The last condition, criteria for instructor qualifications, goes beyond the safeguards against cheating or other defeats of the training examination, but goes directly to the quality of the training instruction. This additional remedy, while not directly related to cheating, is nevertheless within our preserved jurisdiction because the evidence indicated that weaknesses related to the quality of instruction, the expectations of the instructors and the accuracy of grading contributed to disrespect for the examinations. Moreover the failure of the training staff to follow through on reliable and trusted examinations is in itself an indicator of instructor incompetence. Further, the evidence pointed to the importance of the training personnel in the certification of candidates and in the review of the NRC operator's license examination questions and answers.

2070. As we explain in detail in arriving at the ultimate conclusion in this proceeding, there was a failure to fix precisely within the company the responsibility for preserving the integrity of the training and testing program, and in particular, there was a failure to extend quality assurance and quality control concepts to the training program.

2071. Finally, to bolster Licensee's resolve to correct its training and testing program, and to assure that the lesson learned from the cheating episodes lingers long in management's memory, we suggest the imposition of a monetary penalty principally as a result of Licensee's negligence in failing to safeguard the integrity of its training and testing program.

E. The NRC Examination

2072. The NRC Staff concedes that the Staff was lax and that its procedures were inadequate during the April 1981 NRC operator licensing examinations. New procedures which cover proctoring and grading are in effect, and were employed during the October 1981 reexamination of the TMI-1 control room operators. These procedures are sufficient to assure the integrity of the administration of the operator license exams.

2073. We preserved jurisdiction over the substantive content of the NRC examinations only to the extent that the questions are amendable to cheating or other evasive devices. Accordingly the parties did not litigate the substantive adequacy of the NRC examinations, and our conclusion expressed in the August 27, 1981 PID that the NRC examinations are the basic assurance of operator competency remains undisturbed. We believe, however, that greater assurance of the quality of the Licensee's training is required to comply with the Commission's regulations.

2074. In reviewing some of the NRC examination questions to determine their amenability to cheating, the Special Master and members of the Board could not help but note problems with their substantive content. We once had jurisdiction over whether the NRC reexamination was a sufficient assurance of public health and safety, and even though jurisdiction has now passed, the Board feels it is appropriate to pass along our concerns and to note that the Special Master has perceived problems with the exams. This we have done in our findings. We do not, however, adopt the Special Master's conclusions nor do we arrive at any factual conclusions as to the substantive adequacy of the operator licensing exams.

2075. The Special Master was concerned that the exam answer keys conformed to training information, not necessarily plant information; answer keys sometimes were obsolete; and that questions called for very specific design information which would require excessive memorization. Some of the operators who testified complained that the questions did not fairly test their ability to operate the plant.

2076. While we tread lightly in this area because the record on the subject is far from complete, the Board would like to lend its support to the Staff's efforts to reevaluate the entire examination process, not just the written portion.

2077. The failure of the utility in this case to safeguard the integrity of its training and testing process highlights the need for the NRC to have an operator licensing program which is the best possible test of operator competence and the adequacy of the utility's training programs. It is also important that the control room operators themselves have a high respect for the relevance of the examination to actual plant operations and conditions.

F. The Staff's Investigations of Cheating

2078. The NRC Staff conducted four investigations into the cheating events. In general we found that the Staff's investigating response was thorough and adequate. In several instances the Board would have approached the investigation differently, however. The Staff should have interviewed specifically the eight persons who were the only possible exam candidates who could have sought an answer from Mr. Shipman. One OIE investigator concluded that Mr. Husted tried without success to seek an answer from P during the NRC examinations. Since the effort was unsuccessful, OIE decided not to include the matter in its written report of the investigation. As it turned out the Board found that Mr. Husted did not solicit the answer, so the omission would not have affected the outcome. Nevertheless, a perceived unsuccessful cheating effort was clearly relevant to the reopened proceeding.

2079. We have also expressed some concern that the investigating staff accepted without full inquiry the Licensee's opinion on cheating on company-administered exams. This is the opposite side of the coin from faulting Licensee for leaving it to the NRC Staff to investigate certain areas involving Licensee's employees. Each organization had an independent responsibility to make a thorough inquiry.

2080. On the other hand we also recognize that the NRC Staff did not have time or resources to follow every lead. Because of the hearing and the sequestration order, the Staff, as was the case with Licensee, could no longer investigate. The significance of certain episodes may not have become apparent until later. In sum, we recognize that our criticism of the Staff investigation is influenced by hindsight, and we have no basis to question its results.

G. Overall Conclusions

2081. The Board has reviewed its partial initial decision on management issues which included our conclusions on the Licensee's training program to determine whether the Board itself was naive in believing evidence that Licensee had an adequate program. We were convinced, and remain convinced by a blue ribbon panel of experts that the operator requalification program was well-conceived. Licensee had recruited a management staff with outstanding professional credentials and experience to administer the program. Management was unstinting in the resources devoted to the training program and a rational implementation plan was in place.

2082. Our conclusion is that the integrity of the Licensee's training and testing program failed because there was not a clear appreciation of which portion of Licensee's management had the responsibility to safeguard the program and because there was a failure to apply the principles of quality assurance and quality control to the testing and instruction process.

2083. We concluded in our management partial initial decision that Licensee had a sound organizational approach to the training function *vis-a-vis* the operational function. The line managers of Unit 1 were to be relieved of all unnecessary duties, including responsibility for training, so that they could concentrate on their operational responsibilities. Training was placed in a corporate-level division under John Herbein, Vice President for Nuclear Assurance. Training responsibility was also at the corporate level in the Training and Education Department within the Nuclear Assurance Division. The Nuclear Assurance Division, which also houses the Quality Assurance, Nuclear Safety Assessment, and Emergency Planning Departments, was to have provided independent off-site and on-site assurance that its respective functions maintained the expected quality — with the appropriate input of the line managers.

2084. The Board has concluded that the cognizant officials in the Nuclear Assurance Division failed to recognize that training is an activity which must comport to the concepts of operational safety quality control as set out in Appendix B to Part 50. For example, we cited with some concern the fact that the Director of Training, in establishing new procedures to safeguard the integrity of the training examinations, even now has failed to include a provision for sampling or auditing test answers for evidence of collusion — a step found necessary by the NRC Staff to assure the reliability of its licensing examinations.

2085. We note in our conclusion below, however, that despite the failure in the quality assurance of the examination process, we have not found that the TMI-1 operators are incompetent. Most were already licensed before the hearing began, and have since had to prepare for two additional NRC licensing examinations. Although we have found weaknesses in the quality of instruction, we have not found that the instructors failed to instruct or that the students failed to learn. The operators have been repeatedly exposed to appropriate course material. Having also found that the operators have been reexamined by the NRC under appropriately controlled conditions, and that the Board-imposed condition for staffing the unit will be met, the Board rejected the demand by Union of Concerned Scientists that restart authorization be withdrawn.

2086. Although the Board believes that the Licensee is capable of and intends to correct the problems revealed in the reopened proceeding, we impose, or recommend the imposition, of a $100,000 monetary penalty for the negligent failure of Licensee to safeguard the integrity of the examination process, because it failed to instill an attitude of respect for the company and NRC-administered examinations, because it failed to assure the quality of training instruction, and because of negligence in the certification of candidates for NRC operator licenses.

2087. The Board could not walk away from the cheating by G and H, and we believe that the record demands a further investigation of the circumstances surrounding the certification of VV in 1979. However, we acknowledge that we are terminating our part of this proceeding without bringing every miscreant to justice, and without resolving every uncertainty. There are individual due process considerations for allowing matters to rest as they are, and we have no confidence that further inquiry will produce a more reliable record than that made in the hearing before Judge Milhollin.

2088. Moreover, we are concerned that further proceedings would be disruptive. The restart proceeding was necessary in the broader public interest, but the effect of the Notice of Hearing was to revoke the existing operators' licenses of the TMI-1 control room staff without due process. The large honest majority of the operators were denied the fruits of passing the first NRC reexamination by the need for the second reexamination in October 1981; and they were held up to public derision by no failure of their own to safeguard the integrity of the NRC and company-administered examinations. With substantial justification, they have become embittered about these events. They should now be permitted to return to the important matter of preparing the unit for operation without further distractions.

2089. Finally, the Board concludes that the issues in the reopened proceeding have been resolved in favor of restarting TMI-1, and our conclusions to that effect in the first two partial initial decisions remain undisturbed.

III. FINDINGS OF FACT AND DISCUSSION OF THE REPORT

A. The Extent of Cheating

O and W

(Report at ¶¶10-25)

2090. O and W were shift supervisors who cheated on the April 1981 NRC's operator examinations. O's denials at the hearing were incredible. W acknowledged his involvement. It was their cheating which initially required the record to be reopened. Judge Milhollin explains how very important shift supervisors are to the safe operation of the facility; that they are in charge of the reactor when on shift. Report at ¶10. In addition, if it is on an evening or night shift, it is likely that the shift supervisor would be the senior utility official at the facility. In the event of an emergency the shift supervisor becomes the facility Emergency Director with the responsibility to initiate immediately and unilaterally emergency actions and to make protective action recommendations. *See* December 14 PID, 14 NRC at 1469.

2091. Not only did O and W cheat, but they cheated extensively — on company-administered exams, and on both the Reactor Operator (RO) and Senior Reactor Operator (SRO) examinations administered by the NRC in April 1981. Most of their answers on the NRC examinations were identical or nearly so. Report at ¶¶11, 12.

2092. Although O and W resigned as a result of their misconduct, their role in these episodes has not been mooted by their departure as Licensee and the Staff state. Judge Milhollin concludes that their blatant cheating was probably observed by others, although in fairness, he does not impute such knowledge to other particular candidates. *Id.* at ¶24. He also notes that their conduct could not build respect for the licensing requirements among the operators they supervised. *Id.* at ¶14. Judge Milhollin's major conclusions with respect to O and W are reasonable and fair. We adopt them.

2093. We do not, however, endorse Judge Milhollin's recommendation (Report at ¶310) that O and W should be referred for criminal prosecution. Judge Milhollin's recommendation is an appropriate one for him to make in that, as a citizen well informed in the facts, he has been offended by what he perceives to be criminal conduct in a serious safety matter. We note however that his recommendation depends largely upon the "unrepentant" attitudes of O and W (an attitude which, by the way, we did not sense in W's testimony). *Id.* Our only jurisdiction and official interest in this proceeding is the safe operation of TMI-1, not the rehabilitation of O and W who are no longer employees of the Licensee. There is no record basis upon which we can determine that a deterring effect upon those still employed at TMI-1 would be realized by the prosecution of O and W, over and above the deterrent flowing from the fact that O and W were separated from their employment in disgrace. To the contrary, there may be a positive and needed benefit to employee morale at TMI in putting the O and W incident into history, but here again we have nothing but subjective surmise for that assumption.

2094. The Commission does not need our advice on whether to seek the prosecution of O and W; it is a policy and ethical consideration. In any event, because of considerations of compassion alone, this Board may not have been able to arrive at a collegial recommendation, and we have not attempted to do so.

2095. We note also that the Office of Inspector and Auditor, the cognizant NRC component, has already discussed this matter with the Department of Justice. The Department is not interested in a criminal prosecution absent something major of a conspiratorial nature. Tr. 25,345-46. There is no evidence of any conspiracy in the events surrounding O and W beyond the cooperation between them.

G and H

(Report at ¶¶26-77)

2096. G and H are control room operators. Licensee's consultants, Mr. Trunk of Pennsylvania State University and his colleague, discovered many identical or nearly identical answers to questions given on company-administered weekly quizzes. Some of the questions pertained to training and testing required by Item 1(e) of the Commission's hearing order relating to "lessons learned" from the accident. 10 NRC at 144. The only credible explanation to many of these similar or identical answers is cooperation. Other similarities were noted during the hearing. In its own evaluation of the record, the Board itself identified an additional similarity suggesting cheating as we discuss at ¶2104 n.229 below.

2097. Judge Milhollin concludes on the basis of five sets of nearly identical responses that impermissible cooperation must have taken place between G and H. As to four of these sets the Board agrees.

2098. The first set related to "human factors, operational safety". Report at ¶¶33-37. The similarities suggested cooperation as Judge Milhollin completely explains. But, to be fair, Judge Milhollin cast around seeking whether there was another possible explanation for the similarities (*i.e.*, memorization from common-source answer keys) but could find none. Report at ¶37 *citing* G at Tr. 25,750. Licensee disparages this effort in its Comments and argues that, since the testimony by G evaluated by Judge Milhollin is not reliable, he should not have ruled out common memorization of the identical answers. Comments at ¶9. Licensee's analysis does not address Judge Milhollin's reasoning. Licensee seems to be arguing that if Judge Milhollin could not find a benign cause for the answer similarities in the cited testimony, and if that testimony is unreliable, he therefore must not rule out a benign cause, and must infer a benign cause. *Id.*

2099. We cannot accept Licensee's argument. Judge Milhollin simply looked at the only place known to him for possible common-source memorization and found nothing to negate his finding of improper cooperation. Licensee goes on to suggest that the better conclusion is that G and H had the identical answers drummed into them from the training lesson plan, but the citation to John Wilson's testimony (Tr. 24,514-15) does not support that thesis. We adopt Judge Milhollin's conclusion that G and H cooperated on their "human factors, operational safety" answers.

2100. Another set of nearly identical answers analyzed by Judge Milhollin were G's and H's responses to a requirement to discuss the contributors to the generation of hydrogen gas following a LOCA. Report at ¶¶44-48. G and H gave identical incomplete and incorrect answers on two quizzes in that they failed to explain that hydrogen gas is generated by two reactions; one involving aluminum and sodium hydroxide, the other zirconium and water. Judge Milhollin's analysis is logical and complete. He concludes that they cooperated.

2101. Licensee's explanation (Proposed Findings at ¶¶64-68) depends upon a weak chain of improbable circumstances: that G had a tendency not to write complete answers; that when the instructor wrote the missing partial answer, "NaOH" (sodium hydroxide) on their papers in grading the first exam both G and H then incorrectly assumed that "NaOH" was the complete correct answer when faced with the same question on the second exam; that frequent study sessions together reinforced their independently arrived-at misconceptions. *Id.* We adopt Judge Milhollin's conclusion that G and H cooperated on the hydrogen generation answers.

2102. The third set of nearly identical answers leading Judge Milhollin to the conclusion that G and H cooperated responded to a question requiring a list of process lines which are isolated on a reactor trip. Report at ¶¶49-52. The similarities and identical order of listing in G's and H's answers are quite striking:

G	H
MUV-3 letdown	MUV-3 letdown
WDG-V 3,4	WDG-V-3,4 Gas
WDL-V-304,303	WDL-V-303,304 (illegible)
WDL-V 534, 535	WDL-J-584, 534 R.B. Sump
AHV 1A,B,C,D	AHV-1A,1B,1C,1D R.B. Purge
CAV 1,2,3,13	CA-V-1,2,3,13
CAV 4 A/B, 5 A/B	CA-V-4 A/B, 5 A/B
CAV 189	CA-V-189
CFV 19 A/B, 20 A/B	CF-V-19 A/B Sample, 20 A/B (illegible)
CFV-2A,2B	CF-V-2A/2B sample
Licensee Ex. 66E.	Licensee Ex. 66F.

2103. These answers did not appear in that order in any written materials nor were they taught in that order during training. G testified that in fact he had not memorized the answer from an outside source but that he and H, studying together, organized the items on the list in the order of importance then both memorized their work. Tr. 25,765. Competent witnesses corroborated that the list was in the order of importance except for one item. Therefore G's testimony was a logical and benign explanation for the identical order of listing by both candidates. The trouble is, however, that H could not match G's explanation when, under the sequestration order, he later testified. At first he simply could not remember. Tr. 25,898. Then he suggested that the process lines were listed more by system than by importance. Tr. 25,937. He had no memory of why he memorized the list in the sequence given in the exam answers. *Id.* Judge Milhollin concludes that if H had in fact studied with G, and if they had analyzed and rearranged the items in the sequence used by both of them in the exam, then memorized that exact sequence, H should have been able to remember those events and to explain them. We agree. The compelled conclusion is that they cooperated during the exam.

2104. The Bernoulli's equation answers are the fourth set of nearly identical responses which the Board finds clearly establish cooperation between G and H. *See* Report ¶¶58-66. Again, a visual examination of the answers as written by them on the exam demonstrates the remarkable similarity in the responses, even to some spacing and punctuation.

G

> Bernellis [sic] equation is the general energy equation, it states that the total internal energy of a system is equal to the gravitational potential energy plus total kinetic energy of the system plus the system internal energy.

Licensee Ex. 66A.[229]

H

> Bernoulli's equation is the general energy equation, it states that the total internal energy of a system is equal to the gravitational potential energy of the system plus the total kinetic energy of the system plus the system internal energy. We can use it to calculate flow by references to points in system and determine energy differences (work).

Licensee Ex. 66B.[229]

2105. The last sentence in H's answer responds to the second part of the question. G's answer is incomplete. Judge Milhollin had made a very careful analysis of these similarities and concludes, as does the Board, that cooperation seems to be the only explanation.

2106. Licensee urges the Board to read with particular attention its proposed findings on the Bernoulli's equation issue at ¶¶70-83. We have done this, but, even accepting Licensee's version of the evidence, we remain unconvinced that the nearly identical answers are from common-source memorization. After a careful search, no training material could be found to explain the answers. Licensee Proposed Finding ¶72. G was sure he had memorized "cold" the answer from material common to him and H but couldn't remember the source. Licensee Proposed Finding ¶76. H however, could not remember studying with G, but became increasingly positive that the answer was on a blackboard during training. Licensee Proposed Finding ¶78.

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[229] Judge Milhollin and the parties may have overlooked an additional significant similarity. In the first sentence of both responses, the word "equation" is followed by a comma. The correct and commonly understood punctuation is either a period or a semi-colon. In looking at the relevant exhibits we were frequently struck by non-substantive similarities in punctuation and spacing. *Compare* Licensee Exhibits 66A *with* 66B; 66C *with* 66D; 66E *with* 66F; and 66G *with* 66H.

2107. Licensee's witness Trunk suggested that other answers appearing on the same answer sheet were not copied, therefore the Bernoulli's equation probably was not copied. Licensee Proposed Finding ¶81. We demur. There is no suggestion that G and H are compulsive copiers. They would copy only where necessary.

2108. Mr. Trunk also believes that, if G had copied from H, he, G, would have copied the last sentence; that H understands the Bernoulli's concept and would have no need to copy from G. G could not duplicate or explain his Bernoulli's answer when he testified. Tr. 25,773. G also misspelled "Bernoulli's" in his answer. Mr. Trunk's analysis persuades us only that H did not copy from G. The fact that G did not copy perfectly or completely does not obviate the remaining unexplained similarities in the answers. We conclude that G and H cooperated on the Bernoulli's equation answers.

2109. We disagree with Judge Milhollin, however, as to the firmness of his conclusion with respect to the responses to the question "[W]here are the new [TMI-1] radiation monitors located?" Report at ¶53 and ¶54. Both operators answered that the monitors are located in the control room — an answer deemed to be wrong in that the monitors are said to be in other portions of the plant. *Id.* at ¶53. Arguably, if a radiation monitor consists of both the sensor and the read-out instrumentation, the "control-room" answers would be partially correct. If correct, the indication of cooperation has less force. Also it may be that the candidates were thinking only of the read-out mechanism in providing the response. On the other hand "control room" alone could not be the entire correct answer. The fact that both of them, and apparently no other candidates, listed only the "control room" for the location of the radiation monitors does suggest cooperation, but standing alone the answers are not conclusive evidence of cheating.

2110. Judge Milhollin found that other nearly identical responses, while not conclusive, strongly suggest cooperation. These are the responses relating to "forced balance Rosemont" (Report at ¶¶40-43) and the listing of the radiation monitors and associated valves (*id.* at ¶¶55-57). We agree with his assessment that these responses suggest cooperation.

2111. Yet another set of nearly identical responses, those relating to natural circulation (*id.* at ¶¶29-32), while not found by Judge Milhollin to be conclusive of cheating, leaves him uncertain. Standing alone these similarities suggest cooperation. But Licensee points out in its Reply to Findings (¶70) that S and Y, whose integrity have not been questioned, also gave answers virtually identical to those given by G and H on the natural circulation question. Judge Milhollin did not discuss these additional similarities. These similarities lead us to the conclusion that the nearly identical responses by G, H, S, and Y can all be better explained by memorization of common training materials.

2112. Judge Milhollin continued his analysis by noting that, in many tests with many participants, G and H were alone in the number of parallelisms and that their responses were exceptions to the pattern of varied answers on the tests. He also noted that the sheer number of similar answers is striking and he listed some similarities which were not specifically analyzed, for example, the similarities noted when comparing Licensee Exhibits 66C and 66D. Report at ¶74.

2113. Judge Milhollin did not lightly arrive at the conclusion that G and H cooperated on the weekly exams. He pondered the suggestion that they had each memorized the same answers to all of the respective questions (*id.* at ¶75), or that they could have independently copied their answers from lesson materials (*id.* at ¶76), and, after a thoughtful analysis, he is unable to accept such explanations.

2114. Judge Milhollin and the Board noted a common thread running through the proffered explanations for the many similarities in G's and H's answers. They state that they studied together frequently and they memorized the same study or training materials. Not only could these materials not be produced when there was a very strong incentive to produce them, but frequently they cannot even be identified. So, we have on one hand memories that are said to permit very precise and detailed recall of commonly studied materials, but those same memories could not recall the identity of these materials. In their cumulative totality, these explanations are incredible.

2115. Licensee's consultants, Mr. Trunk, and Mr. John Wilson, an attorney retained by Licensee to investigate the similarities identified by Mr. Trunk, initially believed from the objective evidence that the parallelisms in G's and H's responses may well have been the result of cooperation. Licensee reply findings ¶¶48-50. During Mr. John Wilson's investigation, G and H convinced him that they were truthful in their denials. We have considered Mr. Wilson's reasons and find them unpersuasive for the reasons set out above. We discuss Mr. Wilson's role in greater detail in ¶2250 below. We have depended instead upon our own direct examination of the suspected responses, and G's and H's explanations of them. Judge Milhollin correctly remained unconvinced. We adopt his conclusion that some sets of responses independently established cooperation, others strongly suggested cooperation and that the pattern established by all of them also establishes cooperation. There is, however, one possible explanation for the similarities not addressed by Judge Milhollin. Perhaps either G or H copied from the other in every instance without the other knowing it. The extent and the details of the similarities render this explanation too improbable to accept.

Conclusions: G and H

2116. Judge Milhollin concludes that the Licensee should be prohibited from using G and H to operate TMI-1. Report at ¶311. This view is shared by the Commonwealth of Pennsylvania. The intervenors believe that the Licensee is simply not qualified to operate the plant, in part, because of G and H. As we have discussed below, G and H were not parties to this proceeding and they have not been provided a hearing on their licensed status. We have no authority to penalize them without due notice and a full hearing. Judge Milhollin's sanction would be the equivalent to a license revocation, and it would appear to be for life. Even if we had the authority, such severe punishment would be inappropriate. It is true, as Licensee states, that we can recommend to the Commission that a separate action be brought against the licenses of G and H. Licensee would, in that event, remove them from licensed duties until the matter is resolved. Licensee Comments ¶26. Such a proceeding might add yet one more disruption and distraction to the important safety business of preparing the unit for eventual restart, if such be permitted. There is a public interest in concluding this proceeding and its related aspects. All parties are entitled to a final conclusion without unnecessary further delay.

2117. We have also given consideration to requiring the Licensee to design and impose its own administrative remedy to assure that G and H (and others in the operating staff) understand by appropriate discipline that G's and H's cheating in particular is intolerable and unrewarding. But given the fact that the Licensee continues to maintain that G and H did not cheat, we have no confidence that Licensee can proceed in an acceptable manner.

2118. We have however fashioned a remedy which is within our jurisdiction which we propose after considering several mitigating factors. As we discuss below, we hold the Licensee accountable for permitting an undisciplined training and examination environment. While G and H cheated on their own volition, we believe that there should have been a clear and emphatically enforced policy of requiring absolute honesty on every examination. Also, we recognize that the examinations were administered by the company, not the NRC. They were semi-official in that they were required by the Commission's hearing order and regulations, but we cannot discern that the official importance of the examinations was ever effectively impressed upon the operators.

2119. The Board has examined the answers to the quizzes involved in the G and H incidents. The proportion of answers produced by cheating is relatively small. We do not believe that the overall results demonstrate a poor understanding of the course material. We have, then, a question of ethics, not of competence. G and H have passed their NRC examinations under properly monitored conditions.

2120. The Board therefore proposes that G and H voluntarily accept a two-week suspension without pay in lieu of an action against their licenses. The suspension may be at any time G, H and the Licensee deem best. Two weeks is not the result of an exact mathematical calculation; it is the product of our collegial judgment. It is a remedy which is within our jurisdiction and is appropriate because it is fair, final, simple, and responsive to the G and H cheating episodes. In terms of the very large numbers often associated with nuclear power plants, two weeks' pay for a reactor operator does not seem to be very important. But, as to G and H, and, we regret, their families, the effect will be felt and remembered. Moreover, this action will have an adverse effect on their careers. A portion of the monetary penalty imposed by the Board upon the Licensee is directly attributable to their actions.

2121. Accordingly, the Board recommends to the Commission that, in accordance with 10 CFR Part 2, Subpart B, and 10 CFR 55.40, a proceeding be initiated to consider the modification or suspension of the operators' licenses of G and H.[230] If, during the Commission's immediate effectiveness review, the Licensee reports to the Commission that G, H, and the Licensee accept the Board's proposal, this recommendation should be considered void.

S and Y

(Report at ¶¶78-81)

2122. Judge Milhollin correctly concludes that very similar answers on quizzes by operators S and Y are attributable to virtually verbatim similarities to training materials, not to cheating.

GG, W and MM

(Report at ¶¶82-93)

2123. GG is a control room shift foreman, W was a shift supervisor who, as we noted above, resigned after cheating. MM is a shift technical advisor.

2124. On a December 1980 quiz, Lessons Learned Question 1 asked: "List two (2) major areas of weakness noted by the Lessons Learned Task Force." On the same quiz, Lessons Learned Question 2 asked: "The most important lesson learned fell into the general area of operational safety. What was the primary deficiency in this area?"

First Question

2125. MM, W, and GG answered:

MM: Non safety related systems affecting safety systems
operator action compounding the challange (sic)
to safety systems.

Licensee Ex. 66K.

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[230] Section 55.40 also provides for license revocation. We have intentionally not included revocation in our recommendation. We recognize, however, that both the initiation and the results of any such action are beyond our jurisdiction.

W: Non Safety related systems affecting Safety related systems (Challanges (sic) the system) and operator action which compounded the challanges (sic) to the safety system.

Licensee Ex. 66L.

GG: Non safety related systems affecting safety related systems (challanges (sic) the system)
- and -
Operator actions which compounded the challanges (sic) to the safety system.

Licensee Ex. 66M.

Second Question

2126. MM, W, and GG answered:

MM: Operator training inadequate.

Licensee Ex. 66K.

W: Operator training allowing actions which challanged (sic) the automatic actions of the safety related systems.

Licensee Ex. 66L.

GG: Operator training allowing actions which challanged (sic) the automatic actions of the safety related systems.

Licensee Ex. 66M.

2127. Judge Milhollin notes that all three answered "Lessons Learned" Question 1 with the same unnaturally stilted and abstract language and with the same misspelling of the word "challenge". Report at ¶¶82, 83, 89. In addition, as can be seen, W and GG employed the same misspelling and identical language in their responses to Lessons Learned Question 2 on the same quiz. *Id.* at ¶¶83, 90.

MM

2128 Judge Milhollin concludes that MM either must have "cooperated" or that he had copied the same training material with respect to the first question. *Id.* at ¶¶91, 92. This latter alternative we view to be a weak exculpation of MM by

Judge Milhollin.[231] We agree with Judge Milhollin that MM's answer to the second question does not indicate cheating.

2129. It is not clear from the Report how the possibility of copying the same training material can exculpate MM but not GG and W on the same question. Common training material was never identified during the investigations. The incentive to locate any such material was very great. If it had been used by three of the candidates, it seems that evidence to the effect should have been discovered, or at the least, there should have been a specific identification of such materials.

2130. MM did not testify and was not present during the evidentiary sessions. In response to the Board's invitation to comment extended to all personnel named in the Special Master's Report, MM stated that [as a shift technical advisor] he was not required to take the exam in question, that he did so solely to evaluate his knowledge of the material covered. His answer was not graded. He also comments that the language of his answer which appears to Judge Milhollin (and to the Board) to be unnaturally stilted should be viewed in the context of the question, which requires a "list" of two concepts. Now that he has pointed it out, we can see that MM's answer format as it is spaced, is not so stilted and unnatural when viewed as a list. MM also suggests that the fact that his answer varies from the instructor's answer key should not be taken as an indication of cheating if the answer is nevertheless correct. We agree.

2131. He also argues that the instructor must have used information from NUREG-0578 and NUREG-0585, then outlined it on the board during class, from which MM recalled the words during the quiz soon after. From this latter explanation we infer that MM is stating that at the time of the quiz he remembered language verbatim from a source that today he cannot recall. This is understandable; yet the marked parallelisms among the answers by MM, GG and W on the first question still leave us troubled with respect to MM.

2132. Nevertheless, considering MM's lack of motive to cheat, his explanation about the "list" format and spacing of his answer, his arguable, if not strongly convincing explanation for the source of the answer, and the fact that this is a single, short episode, we do not find that MM cheated on the December 1980 quiz.[232] This is not the total exoneration to which MM might have been entitled after a full hearing with his participation. The evidence simply isn't there to overcome all the implications of the very similar answers. It would be exceedingly unfair to MM, and possibly a factual mistake, if his status or reputation were to be affected by our uncertain conclusion.

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[231] Exoneration of MM is a view which is apparently shared by the intervening parties in that the Commonwealth accepts the Licensee's expert testimony to that effect (Commonwealth proposed findings at ¶44) and TMIA discusses the identical answers by GG and W but does not urge a finding with respect to MM (TMIA proposed findings at ¶¶106-14). The Aamodts were silent on MM in their proposed finding before the Special Master, but in their Comments (at 16) without explanation they include MM in their proposed list of cheating personnel.

[232] This finding is made partly upon MM's argument concerning the significance of evidence of record, partly upon MM's factual statements not in evidence and partly upon our own analysis. We see no prejudice to any party in this approach. Contrary to the intervenors' general complaints, their right to due process is not compromised in that none of them had urged a finding of impropriety against MM before the Special Master. Our only alternative was to reopen the record to take evidence from MM

(Continued)

GG and W

2133. The answers by GG and W on the first question were longer with more identical points. The spacing does not suggest a listing of ideas. Moreover, their answers to the second question were also identical and contained the same misspelling. It may be that one of them imperfectly memorized parts of the answers from the same source used by MM if his account is to be believed, but we are not persuaded one way or another that there was a common source during training. The evidence is convincing that even if there were an unrecalled common training source from which either GG or W memorized answers, the many identical points in their answers establish cooperation. We adopt Judge Milhollin's conclusion to that effect.

2134. An inference, albeit weak, to be drawn from these responses and the testimony is that W, a known cheater, copied from GG. However, in view of the extent of the similarities, we also conclude that GG permitted W to copy or at least knew that he copied. This conclusion troubles us, and presents a difficult choice. We cannot, of course, be perceived to, nor do we condone cooperation by GG. The matter is important. For example, as shift foreman, GG might briefly serve as the Emergency Director if, at the outset of an emergency, the shift supervisor is elsewhere in the plant.

2135. On the other hand to disqualify him from licensed duties is a very severe sanction — one that is not warranted when all of the circumstances are considered. Our finding raises a question of GG's ethics, not his competence. As to his ethics, his conduct in permitting W to copy must be viewed in light of the fact that (1) W was his supervisor, (2) this was a company-administered examination, (3) there was inappropriate informality and inadequate proctoring during the examinations, and (4) there was a broad attitude of disrespect for the examination process. From these circumstances we conclude that GG was placed in a very difficult situation by his employer. It is very understandable why he would not prevent W from copying. We would not make the same finding on an NRC licensing examination.

2136. We have reviewed the transcript of GG's testimony and do not fully share Judge Milhollin's opinion that GG's credibility is undermined. Report at ¶93; *see* Tr. 25,683-720. While we might wish that GG had directly acknowledged W's

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because he had no other opportunity to confront the evidence against him. Such a course seems unlikely to improve the record or to materially affect our decision. Considering the time and resources required to reopen an evidentiary record, and with no apparent possibility of a different result, reopening is not warranted.

copying, considering his acknowledgment that W "might" have copied, we will not find him ethically disqualified for lack of candor. He was in a very difficult situation during the examination, as we noted, and again during the hearing.

2137. One point remains unresolved. Although we did not find that MM cooperated, neither did we find that his explanation was convincing. Assuming *arguendo* that there was cooperation involving MM, GG, and W, and having found that W copied, is there any assurance that GG did not copy from MM? It is more likely that GG would have been the original author of the nearly identical answers common to GG and MM, because MM's answer is the shortest and the similarities in GG's and W's answers continue beyond MM's shorter answer into the second question. We recognize that this analysis is tenuous, but it is the best we can make from the record before us.

Conclusion: MM and GG

2138. We impose no sanction on MM or GG.

Mr. Shipman at the Coffee Machine

(Report at ¶¶94-100)

2139. Mr. Henry Shipman, the plant operating engineer, is a principal assistant to the TMI-1 manager of operations, Michael Ross, who in turn is the senior operating official. According to his statement and testimony, Mr. Shipman took a company-administered mock exam and both the NRC RO and SRO examinations in April 1981. During one of the exams — his memory is uncertain as to which — he took a break near the coffee machine in the hallway. He was approached by a presumed license candidate who asked him the answer to an exam question, or possibly a question only related to an exam question. Mr. Shipman spontaneously provided the brief answer but shortly afterward began to worry that this assistance was improper. He did nothing about it, however, until after the reopened hearing on cheating began, then he voluntarily reported the incident, but not the identity of the questioner, to Mr. Hukill, TMI-1 Vice President.

2140. He then became the object of intense inquiry, first by Mr. Hukill, then by the NRC investigators, followed by further inquiry by GPU Nuclear President Robert Arnold. Finally he appeared at Judge Milhollin's hearing where he again underwent intense examination, and, incidentally, waived his right to confidentiality.

2141. While he freely admits his poor judgment in supplying the answer, he has steadfastly maintained that he does not remember who asked the question. He convinced Mr. Hukill that he can't remember and he later convinced Mr. Arnold, who placed a letter of reprimand in his file for supplying the answer. Mr. Shipman could not convince the NRC investigators or Judge Milhollin that he cannot remember. The Commonwealth of Pennsylvania urges a finding that there is no hard evidence that Mr. Shipman is lying, as does the Licensee.

2142. Mr. Shipman's voluntary report and his testimony is the only evidence that he acted improperly. Without it there is no *corpus delicti*. Nor is there any evidence that he does remember who approached him except for the implication that he should remember. Can we "convict" him on his own uncorroborated admission but fail to accept his word about the identity of the other person? Perhaps. His admission that he supplied the answer is against his interest and therefore very believable. His statement that he does not remember the questioner is not as believable, but not totally incredible. His denials could be said to be also against his interests because he must know that his denials are doubted and are causing him trouble. On the other hand, his denials are consistent with a natural reluctance to inform. Also, having first denied to Mr. Hukill that he remembers who asked about the question, he could not later admit such knowledge without admitting to having lied initially. Perhaps his initial denial was spontaneous; it is a natural reaction. Thereafter, he would feel trapped into that position.

2143. We share Judge Milhollin's reluctance to accept Mr. Shipman's testimony concerning his memory of the events but for somewhat different reasons. Mr. Shipman first declined to accept and to sign the NRC investigators' version of their interview with him, because, in the interest of accuracy, he preferred to write out his own version later. Staff Ex. 28, at 5, and at Enclosure 3. In his written statement he was definite that the question was asked during the NRC examination and that the question asked was one he presumed to be on that exam. Staff Ex. 28, Enclosure 3. Licensee, however, points to Mr. Shipman's hearing testimony that he was uncertain about which exam and whether the question was on the exam. Licensee Comments at ¶36. The significance of any weakness in Mr. Shipman's memory, as possibly reflected in his testimony, is that it makes his asserted inability to remember the questioner more plausible. It is, of course, possible that on later reflection Mr. Shipman lost confidence in the accuracy of his earlier written statement and tempered his testimony accordingly. The record is very confusing as to exactly what he does and does not remember, except that he consistently states that he remembers nothing whatever about the questioner.

2144. The Board has evaluated the record and the Report from all these angles. Although we do not adopt all of Judge Milhollin's analyses of this factual issue, his conclusion that Mr. Shipman is not truthful in his denial is probably the best inference to be drawn. But this inference is not so convincing that we are willing to recommend Mr. Shipman's removal or suspension on that basis. The severity of any sanction should also reflect the fact that Mr. Shipman volunteered the very information now bringing about the sanction. There is a public interest in encouraging such disclosures. If he were to be severely penalized for not disclosing enough, any disclosure whatever would be discouraged.

2145. Judge Milhollin concludes and recommends that Licensee should not be permitted to use Mr. Shipman in operating TMI-1 until he names the unidentified questioner or until he gives a credible reason why he cannot name him. Report at ¶314. Neither will ever happen. Intervenor TMIA, for example, would, without further ado, simply remove Mr. Shipman's license permanently. TMIA Comments at 10. The difficulty with either sanction is that it assumes that the evidence beyond doubt is conclusive that Mr. Shipman does remember his questioner, a conclusion which we have found is not free from doubt. The letter of reprimand and our own stated suspicions about his candor are appropriate sanctions.

2146. The Commonwealth points out that a more important concern is that there is an uncaught cheater who is more culpable than Mr. Shipman in that Mr. Shipman acted without premeditation and admitted his participation. Of even greater importance is the fact that the unknown cheater felt free to approach a member of middle management for assistance in cheating on what may have been an official NRC licensing examination. The major remaining significance of this episode is whether the Licensee and the NRC Staff adequately investigated this incident which is also the subject of Judge Milhollin's report as we discuss below.

Conclusion: Mr. Shipman

2147. We impose no additional sanction upon Mr. Shipman.

P and Mr. Husted in the Unproctored Room

(Report at ¶¶101-111)

2148. P is a TMI-1 shift supervisor and Mr. Husted is a licensed operator instructor. They took the April 1981 NRC examinations together in a frequently unproctored room with no other candidates present. During an interview by NRC investigators Messrs. Ward and Baci, P expressed anger about the fact that the NRC examiner, by not proctoring, made him "vulnerable to any allegation of cheating" in that it "removed a potential witness to his [P's] honesty" and that it put P in a position where he could be solicited. Mr. Ward became suspicious because of P's anger (or perhaps by the force of his anger) and tricked P by pretending untruthfully that he, Ward, knew that Mr. Husted had solicited P. Whereupon, according to Ward, P was startled and admitted that Mr. Husted had one time in fact solicited P for an answer but that P did not provide the answer.

2149. At the hearing P denied any such admission. P gave another account of the interview in which he offered the explanation that confusion between questions from both Messrs. Ward and Baci must be the explanation for Mr. Ward's belief. But in testimony which convinced Judge Milhollin, Mr. Ward stated that P had unmistakably admitted that Mr. Husted had solicited the answer. Judge Milhollin concludes that Mr. Husted did solicit the answer and that P has denied it untruthfully. The Board, however, finds that there is insufficient evidence to support these conclusions.

2150. Judge Milhollin's analysis and conclusions depend heavily upon witness demeanor. As we noted at the outset, while we give due consideration to Judge Milhollin's observations of witness demeanor, we believe that it is our particular duty as the primary triers of the fact to examine carefully whether the objective indicia of witness credibility is consistent with inferences drawn from demeanor.

2151. We begin our analysis of this episode by observing that we draw no inferences whatever unfavorable to P or to Mr. Husted because P was angered by the lack of NRC proctoring during the exam. We would call it justified indignation. This is not to say that Mr. Ward should not have used P's anger as a clue suggesting further inquiry. But investigators' leads and permissible adjudicative inferences are vastly dissimilar. We wonder, however, whether Mr. Ward's view that P was inappropriately angered may not have colored Mr. Ward's interpretation of the disputed meaning of P's remarks during the OIE interview.

2152. Despite the fact that Mr. Ward admits that he misled P during the OIE interview (a time-honored investigative technique), we accept Judge Milhollin's judgment that Mr. Ward is a truthful and sincere witness. He has no reason not to be, nor is there any evidence to the contrary.

2153. Judge Milhollin stated at ¶111, "[M]r. Baci, who also testified, was present when the admission occurred" but he did not explain the significance of this observation. Mr. Baci, on the witness stand with Mr. Ward, remained silent when Mr. Ward testified on this point. When a member of a panel of witnesses remains silent during oral examination it is sometimes understood by prior stipulation that the silent witness agrees or does not disagree with the speaking witness. We are aware of no such understanding in this instance, and we assign no evidentiary weight to Mr. Baci's silence.

2154. Moreover neither Mr. Ward nor Mr. Baci has notes taken contemporaneously with or soon after the disputed interview and the "admission" by P, for reasons irrelevant to the specific issue, was never included in the investigators' official report. Thus there is no independent corroboration of Mr. Ward's testimony, which depends entirely upon his memory and his interpretation of the events.

2155. We also note the undisputed fact that P was questioned by both investigators during the same interview. This gives some credence to P's opinion that Mr. Ward did not understand that P's response was to Mr. Baci on a different question, not to Ward. While P's explanation does not seem very logical to us, it demonstrates the potential for confusion where two investigators interrogate at once. In any event, it is not necessary for P to explain how Ward came to Ward's conclusions.

2156. Finally we are particularly struck by Mr. Ward's recollection of the nature of the question Mr. Husted is said to have put to P. Mr. Ward testified that P said the question was ". . . more like what a certain concept was, well, what in hell does this mean or words to that effect." Tr. 25,463. If this is so, one inference is that Mr. Husted was asking for clarification of a question when, it must be recalled, there was no NRC examiner present to clarify it for him. While this would not be a good thing for Mr. Husted to do, it is not the same as seeking the answer. Another equally reasonable explanation of Husted's remark, if in fact it was made, is that ". . . what in hell does this mean . . .?" was nothing more than rhetorical grumbling. Accordingly, as to P we find that Mr. Ward's accusations are not sufficiently supported by reliable evidence.

2157. As to Mr. Husted, Mr. Ward's testimony lacks any probative value whatever. Even according to Mr. Ward's disputed account of the interview, P could not remember very well what Husted had asked him, and Ward himself could not remember very well what P had told him. Tr. 25,463-64. Moreover, as we noted above, whatever it was that Mr. Ward remembered about whatever it was that P remembered about Mr. Husted's question, it is as susceptible to a benign inference as it is to one of cheating. Added to all of this uncertainty is the fact that because of the sequestration order, Mr. Husted himself was not present to hear and to confront Mr. Ward's hearsay testimony.[233] Thus we leave the subject of Mr. Ward's accusations with the slate wiped clean for P and Mr. Husted.

2158. Having found that the charges leveled against P and Mr. Husted by Mr. Ward are unsupported, there should be no need to assess the credibility of either in denying those charges. But Judge Milhollin points to other areas of asserted misconduct by each of them as support for his conclusions that P and Mr. Husted untruthfully denied Ward's charges. Therefore a subissue arises as to whether either should be found to be ethically unqualified to perform licensed duties.

2159. P is found to be untruthful by Judge Milhollin because he testified that he had not seen operators cooperate on weekly quizzes, when in fact OO testified that OO, P and Q discussed a math problem on a weekly quiz. OO was quite clear on this point. Tr. 25,975-76; 25,995-96. Judge Milhollin found OO's testimony to be credible, observing that OO incriminated himself by the testimony. Report at ¶106. However in view of OO's disinclination to call "cooperation" on weekly quizzes "cheating" (Tr. 25,968-74), and in view of testimony by OO and others concerning the uncertain rules pertaining to the weekly quizzes and their informality, we cannot find that P's conduct, based upon the single allegation by OO should disqualify him from licensed duties.

2160. As to whether, as found by Judge Milhollin, P untruthfully denied observing cooperation on the weekly quizzes, we find that he did not. Report at

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[233] However, Mr. Husted was informed of Mr. Ward's testimony (Tr. 26,910; 26,948) and was permitted to address the basic allegation.

¶106. It is possible that P did not recall the single event referred to by OO and cited in the Report as evidence of P's untruthfulness or that P did not regard the episode as cheating. In fact P was never asked about the incident with OO. P was asked, in the testimony relied upon by Judge Milhollin, a general question of whether he had ever seen candidates cooperate on weekly quizzes. He replied that he had seen them ask clarifying questions about the questions but not about the answers and then only when proctors were not available for that purpose. Tr. 26,701-02. This is consistent with OO's testimony. Tr. 26,995-96. There is no evidence that P lied about the incident with OO, P and Q.

2161. Judge Milhollin also found that P was not believable in his testimony as to whether he became angry during the examination or whether it was during the OIE interview. Report at ¶¶107-08. To arrive at the conclusion that P is untruthful in this regard requires, in our view, too fine an analysis of too few facts. Moreover we cannot discern from the stated context of this subissue that P had a motive to be untruthful.

Conclusion: P

2162. The Board reaches no conclusion unfavorable to P.

Mr. Husted's Refusal to Cooperate with NRC
(Report at ¶¶109-10)

2163. Judge Milhollin found that Mr. Husted refused to cooperate with NRC investigators during an interview on July 29, 1981. He also found that Mr. Husted, as conceded by Licensee, testified about the matter in a less-than-serious and in a flippant manner. Report at ¶109.

2164. In a subsequent interview by NRC investigators, Mr. Husted provided a small amount of information concerning rumors about passing papers during an examination. He claimed that he remembered the information after the first interview. Judge Milhollin concludes that Mr. Husted is not a credible witness. This is a finding based in part upon Judge Milhollin's observations of Mr. Husted's demeanor.

2165. The Board has carefully read Mr. Husted's testimony in which he attempted to explain his first refusal to answer the questions of the NRC examiners and his claim that he later remembered some information. Tr. 26,910-37. His testimony is incredible and the transcript of it is consistent with Judge Milhollin's findings as to his demeanor. We note in particular that his explanation that, because he didn't *have* any information to provide, he first told the NRC investigators that he did not *want* to answer their question is simply not believable. Tr. 26,928-29. *See* Report at ¶110. To his credit, however, he did candidly admit that he had first refused to answer because in part he ". . . did not like the way the investigation was conducted." Tr. 26,929. We conclude that Mr. Husted refused to cooperate with the NRC investigators. Moreover, later when he provided some information, he continued to withhold information within his knowledge; and he provided an incredibly inconsistent account of his reasons during the hearing.[234]

2166. The situation with Mr. Husted presents much the same dilemma as that involving Mr. Shipman, except that we perceived a sense of seriousness and regret in Mr. Shipman's testimony. We found above that there is no reliable evidence that Mr. Husted himself cheated. He could have denied from the outset that he had any information whatever about cheating, and he probably would have escaped censure. But he came forward voluntarily with some information. By first refusing to answer fully the NRC examiners' question he raised suspicions where perhaps none would have arisen otherwise. His testimony on the matter was not only unbelievable, but it gave the sense that he didn't care whether he was believed or not.

2167. These factors are not exactly quantifiable but they add up to a conclusion that, if Mr. Husted is representative of the TMI-1 training department, his attitude may be a partial explanation of why there was disrespect for the training program and the examinations. We would have expected Mr. Husted to shoulder at least part of the responsibility for the need perceived by O, W, G and H to cheat. We would expect him to be gravely concerned about the damage to his co-workers, his employer and the public's confidence in the operation of the unit caused by the cheating episodes and failure of his own training department to create a serious and organized environment during the training and quizzes. As a licensed operator instructor Mr. Husted may have the ability to impart accurate technical knowledge to his charges — the record is silent on this. But, from our evaluation of his contribution to the investigation and the reopened hearing, we question whether he is able, or if able, willing, to impart a sense of seriousness and responsibility to the TMI-1 operators.

Conclusion: Mr. Husted

2168. Our dissatisfaction with Mr. Husted's conduct during the investigation and his testimony is not related to his status as a licensed reactor operator. An action against his license would be inappropriate in that it would not be responsive to the problem, which we have found to be one of attitude. We have no evidence that the attitude we criticize is manifested in his performance as a teacher but, as noted above, we fear that such is the case. But there is also the widely held view in the field of education that the attitude of a teacher is irrelevant to his or her competence. Mr. Husted does not have to love and respect the NRC to do his duties. Yet our doubts persist about his competence to instill a sense of seriousness about the important need for integrity, discipline and public confidence in the TMI training program. Below, ¶2347, *infra*, we require changes to be made in the Licensee's training program including the establishment of criteria for qualifications of training instructors, and the auditing of training at the point of delivery. We recommend that the qualifications and delivery performance of Mr. Husted receive particular attention during the forthcoming review of the TMI training program. We impose no direct sanction on Mr. Husted.

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[234] The Commonwealth of Pennsylvania submitted proposed findings on this subissue which we consider to be an excellent factual analysis of Mr. Husted's statements and testimony. Commonwealth Proposed Findings ¶¶15-23.

U in Mr. Husted's Office

(Report at ¶¶112-22)

The Telephone Call [by U] to KK

(Report at ¶¶123-29)

Rumors about U

(Report at ¶¶130-32)

2169. U is a control room shift foreman. Either he has an unlucky affinity for situations having an aura of cheating, or he was involved in cheating episodes. By an exhaustive analysis of several factual situations, Judge Milhollin concluded that U probably made himself available near the examination rooms during the April 1981 NRC examinations to assist candidates, and that he in fact offered by implication to assist at least one of the candidates. However, troubled by substantial doubts, Judge Milhollin recommends no action. It is clear to us that Judge Milhollin wrestled long and hard with the evidence before arriving at his conclusions. The Board itself has difficulty, because, standing alone, some of the incidents relied upon by Judge Milhollin would not be sufficient to convince us, but together they suggest aid in cheating.

2170. By way of background, in April 1981 the RO and the SRO examinations were each administered twice over four days. The "A" RO and SRO set was followed by the "B" set. U had taken the "A" set on April 21 and 22. The first incident involving U was his appearance in one of the examination rooms on April 23 in the morning before the "B" set began. He had conversations with the "B" set candidates to whom information on the "A" set questions would be helpful. U admits that he "may have" told the candidates what categories of subject matter were covered in the "A" set. Tr. 26,879. The record does not disclose whether candidates were instructed not to discuss the examination material. There should be, but there is not, some form of sequestration in these situations. As to U, whether or not he was instructed not to discuss the examination questions, he should have known that it was implicitly not permitted. His judgment in so doing was very poor.

2171. Four operators, some credible, some not very credible, testified that they heard rumors following the April 1981 examinations that someone had been available near the examination rooms to help the candidates. Two witnesses identified U as the subject of the rumors. One credible witness, OO, heard the rumor *before* the examination. KK reported the rumor to be that the person was there to help the candidates with the knowledge of someone higher up in the company. Staff Ex. 27, at 30.

2172. Rumors, of course, are notoriously unreliable and ". . . are the worst type of hearsay."[235] They can be malicious and inaccurate in their genesis and in their repetition. They can derive from a single source but spread to seem like common knowledge, and they cannot be tested by confrontation.

2173. Nevertheless, we believe that Judge Milhollin prudently evaluated the rumors. Even those witnesses whose credibility is doubted, O and W, are credible in their testimony recounting the rumors. The rumors do not further the interest of any participant, thus they are more believable than a rumor which would advance the interest of the originators or the communicators. Mr. OO's version of the rumor was reliably predictive in that he heard in advance that the assistance would come from someone placed in Mr. Husted's office. And indeed, as Judge Milhollin discusses at length, Mr. U remained in the vicinity of that office during the two-day "B" exams. Finally, it is possible that the witnesses who recounted the "rumors" were in fact testifying about more direct experiences than they admitted. There has been a very strong reluctance on the part of those involved to testify against their co-workers. By recounting "rumors" they are spared this unpleasantness while at the same time assuaging any feeling of guilt about not being forthright. We concede however, that much of the foregoing analysis is speculation. We approach the "rumor" testimony with caution and give it independent weight only as it relates to Licensee's response to the rumors. We give the rumor testimony no weight whatever insofar as it would tend to incriminate U.

2174. Consistent with the rumors, U in fact was headquartered in Mr. Husted's office in the vicinity of the examination room during the "B" examinations by prior arrangement with Mr. Husted who was then taking the exams. U testified that his sole purpose there was to study, but Judge Milhollin doesn't believe him. Judge Milhollin's discussion is reasonable. Report at ¶¶115, 119-20. The Board, however, remains uncertain.

2175. Much is made of the fact that U claimed to have used Mr. Husted's office to study for the next exam on the very day following a grueling two-day session taking the NRC licensing examinations. The next exam was scheduled for some time in the relatively distant future — four or six months later. As unlikely as such diligence might seem, the evidence was unrefuted that U and others were assigned by management to study on those two days. Judge Milhollin recognizes that U was assigned to study (at ¶115), but does not discuss why, in view of that fact, it was improbable that U actually intended to study. The record does not disclose what else U could have done to justify his wages on the days in question. Moreover, although it was the only time before or after the episode that U had used Mr. Husted's office to study, it was also a rare occasion that Mr. Husted's office was available for that purpose. He was absent taking the examinations.

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[235] *United States* v. *Mandel*, 591 F.2d 1347, 1369 (4th Cir. 1979); *cert. denied*, 100 S. Ct. 1647, 445 U.S. 961; 64 L. Ed. 236 (1980).

2176. To the Board, the evidence on the use of Mr. Husted's office during the "B" exams falls roughly equal on both sides of the subissue. It was a good place to study and a good place from which assistance on the exam could be given. There were other places to study. U spent a lot of time not studying during the relevant period, but his assignment was to study. We can't decide this subissue.

2177. Mr. OO testified that U approached him outside the examination room with an unspoken but implicit offer to help. This testimony is found by Judge Milhollin to be credible, based in part upon his observations of OO's demeanor. *Id.* at ¶¶118, 121. This may be a reasonable conclusion for Judge Milhollin to reach. For the Board, however, OO's subjective interpretation of U's unstated purpose in approaching OO is too far removed from our ken to be the basis for a reliable conclusion.

2178. U himself testified that he may have unknowingly provided someone with a short answer during the examination, that providing a short answer would not in his view be cheating, and that it is "not unlikely" that an exam-taker could have received an answer while U and others were in the hallway outside the examination room. Report at ¶117, *citing* Tr. 26,837-38; Tr. 26,862-63; Tr. 26,874-75.

The Telephone Call [by U] to KK

(Report at ¶¶123-29)

2179. The evidence is persuasive that a person identifying himself as "U" called KK, a shift technical advisor, on April 23, during the "B" examinations, and asked KK the answer to an easy question which was *not* on the "B" examination. KK, knowing that the "B" examination was in progress, but not knowing that the question was not on the exam, queried "U" if he was taking the exam. Whereupon "U" replied that he was not, but that he was helping O who was taking his exam. KK then told "U" that he would not, therefore, answer the question until after the examination. KK did not identify "U's" voice, but his memory of the question and the conversation is definite and is reliably corroborated. *See* Report at ¶123.

2180. U's testimony on this episode was rather like his other testimony which Judge Milhollin referred to as "non-denial". *E.g., id.* at ¶122. He admits that he could have called KK and that he may have stated that the call was about a test question but it would have been on another and unrelated test. Tr. 26,483-84; Staff Ex. 27, at 37-38; Report at ¶124. But U asserts that he did not call for the answer to the question remembered by KK nor to help anyone in that no such help was required because the answer was easy.

2181. Judge Milhollin's analysis and the supporting evidence convinces the Board that the person claiming to be "U" who called KK was in fact U, that the easy question asked was not on the exam in progress, that U did state that he was asking in order to help O take the exam in progress, and that U accepted, without counter explanation, KK's explanation that he could not provide the answer because of KK's stated assumption that the question was on the exam. *See* Report at ¶¶124-29; Staff Ex. 27, Enclosure 8, at 3-7.

2182. Judge Milhollin's understanding becomes uncertain at this point accurately calling the entire affair a mystery. *Id.* at ¶129. He speculates that U could have been "testing" KK before asking the "real" question. *Id.* We agree that the purpose of U's phone call is unclear. U is the only person, with the possible exception of O, who can provide the solution to this mystery. Although afforded the opportunity, U has not disclosed his purpose. Therefore Judge Milhollin's inference that U was testing KK before the "real" question is not unfair.

2183. Judge Milhollin concludes that the evidence is not sufficient to establish that U was recruited to offer assistance to the test-takers by management or by fellow employees. *Id.* at ¶122. Our own review of the evidence fails to discover any evidence that U was encouraged by others to perform this role.

2184. Intervenor TMIA recognizes this state of the evidence but comments (at 5) that the evidence does not appear to preclude the possibility that Mr. U on his own may have stationed himself to render assistance to the exam candidates. This is an inviting conjecture with some evidentiary support. U seemed to be ubiquitous around the examination room during the "B" test. His own testimony reveals that he may have aided the "B" candidates with "A" examination information, that he may have "unknowingly" provided a "B" candidate with a short answer in the hallway, and that during the "B" exam he may have called KK about a question, albeit on another test. Here again we are faced with a dilemma where the principal hard evidence against a suspected malfeasant is his own testimony. Thus again we are concerned and hesitant about selecting testimony which inculpates the witness while rejecting the testimony that exculpates him. U has consistently denied knowingly aiding the exam candidates. We recognize that U, and perhaps other witnesses, may have vaguely admitted facts consistent with suspicions of improper conduct as a precaution against a perjury charge if later that conduct is proved. But absent some reliable external evidence of U's misconduct it would be unfair to infer that his admissions were precautionary.

2185. This is yet another aspect of the suspicion and confusion that swirls about U. Judge Milhollin prefers to give U the benefit of the doubt and recommends that no sanction be imposed. Report at ¶319. On some subissues we have made conclusions more favorable to U and on others less favorable to him than has Judge Milhollin, but, in sum, we come to the same result. We, too, reluctantly give U the benefit of the doubt.

[Other] Rumors about U

(Report at ¶¶130-32)

2186. Judge Milhollin has correctly declined to find that U used notes written on his hand and crib sheets during NRC and company-administered examinations. Rumors to this effect had circulated among the wives of some of the TMI employees.

Conclusion: U

2187. The Board imposes no sanction on U.

The Telephone Call to WW

(Report at ¶¶133-34)

2188. WW is a shift technical advisor who received a phone call during a company-administered exam requesting information which, as he later learned, would have been useful on that exam. He could not identify the caller. Judge Milhollin's analysis of the incident is substantially correct except he concludes with certainty that the call was cheating in that the question asked was in fact on the exam. Since the information requested was only a portion of the needed answer, and the information could have been requested for other reasons, that conclusion, while probably correct, is not inevitable.

2189. We agree with Judge Milhollin that there may be another uncaught cheater in the plant, but unlike the case with Mr. Shipman, the caller to WW may be one of the cheaters already identified in the reopened proceeding. Judge Milhollin does not comment on WW's role in this episode. WW should be admonished for carelessness and censured for not coming forth with the information early in the NRC investigation. On the other hand we recognize that he did volunteer the information. No other sanction is called for.

VV and O in 1979
(Report at ¶135)

2190. It is not clear from Judge Milhollin's brief discussion (at ¶135) of the incident involving VV and O in 1979 that the episode does not have direct relevance to the TMI-1 examination and testing procedures and the TMI-1 operators. The incident involved TMI-2 employees before the period encompassed by the reopened proceeding. It is only relevant to the competency of GPU Nuclear's management as Judge Milhollin discusses in ¶¶220-3 of his report.

B. Management's Involvement in Cheating
(Report at ¶¶136-83)

2191. In this section the Special Master evaluates four issues pertaining to whether Licensee's management was itself involved in cheating. One issue pertains to the definition of management (Report at ¶¶181-83), and another relates to a totally incredible allegation of cheating on a Radiation Work Permit test in April 1979 (*id.* at ¶¶179-80). Of special importance are allegations, which we find to be baseless, that the TMI-1 Manager of Plant Operations successfully schemed to prevent proctoring during the April 1981 NRC examinations, and at the same time, improperly influenced the examination answer keys.

Keeping the Proctor Away from the Examination Room
(Report at ¶¶137-52)

Broadening the Answer Keys
(Report at ¶¶153-78)

2192. Michael J. Ross, Manager of Plant Operations, reviews and schedules all operations and directs the activities of about 110 operating personnel consisting of the shift operating staff, the radwaste group and several operations engineers. We commented in the "management" PID that he may be the most important person of the TMI-1 operating team with respect to public health and safety. He had testified before the Board five times over many days on a wide variety of design, procedures and operator training issues. As we noted in the partial initial decision, we were favorably impressed by his testimony. August 27 PID ¶155, 14 NRC at 416, 439-41. The allegations against him have the most serious implications of the entire inquiry on cheating.

2193. YY, a former employee of TMI-1, accused Mr. Ross of purposely keeping the proctor away from the examination room during the April 1981 NRC licensing examinations. He also accused Mr. Ross of improperly influencing the answer keys on that exam so that the candidates would be scored more liberally. Judge Milhollin concluded that those charges were substantiated. In addition to YY's testimony Judge Milhollin depended upon his analysis of eleven questions and answers on the examination and his conclusion that Mr. Ross' denials were incredible.

2194. The Licensee was shocked by Judge Milhollin's conclusion and immediately (April 30, 1982) moved the Board to reopen the record so that we could hear directly from Mr. Ross. The motion had merit, but we believed that reopening might not be required because, as it happened, the Board had already evaluated Judge Milhollin's findings on Mr. Ross, examined the evidence on its own, and had arrived at a tentative conclusion opposite to that of Judge Milhollin.[236]

2195. After a Board conference with the participating parties, Licensee withdrew without prejudice its motion to reopen and the Board served for party comment a draft of its tentative finding on the Ross issues.[237] As a result of the party comments, our conclusion that Mr. Ross did not act improperly in the episodes involved in Judge Milhollin's report has been reinforced.

2196. By way of background, it is an established practice that NRC operator licensing examiners review the test questions and proposed answer keys with knowledgeable utility officials soon after the examinations are underway so that the validity of the questions and answers to a particular plant may be ascertained. To preserve the integrity of the exam this is not done before the examination, but it must be done soon after it begins, to afford a timely opportunity to modify questions that are plant specific. The company representative reviewing the NRC examination normally would not be a license candidate.

2197. On April 23 and 24, 1981, Mr. Ross and two licensed company training officials, Messrs. Boltz and Brown, were called upon by NRC licensing examiner Bruce Wilson to review with him the questions then being presented in the "B" examinations and the answer keys to both the "A" and "B" sets. Unfortunately an unusual situation prevailed then at TMI in that all licensed officials including Messrs. Ross, Boltz, and Brown were required by Commission order to be re-licensed. Mr. Ross and his two colleagues had just taken the "A" set of examinations during the preceding two days, but were the best qualified to evaluate the answer keys to both the "A" and "B" sets and the questions for the "B" set. They had not, of course, seen the "A" set questions or answer key before they took that exam.

2198. This was not a situation of Mr. Ross' making; he did not seek the opportunity. No one asserts that he should not have rendered any assistance to Mr. Wilson. No accusations have been made directly against Messrs. Boltz and

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[236] We had proceeded to a tentative conclusion before receiving party comments because no party had urged the findings made by Judge Milhollin during the reopened proceeding. We had an advance draft of that portion of the Special Master's Report.

[237] Unpublished Memorandum and Order Regarding Licensee's Motion to Reopen, May 5, 1982.

Brown. In this instance however, the procedure meant that the three company officials had an interested voice in the formation of the questions and answer keys and it meant that the examiner, while reviewing the test material with them, was not able to attend to his proctoring responsibilities. Thus a plausible background exists for the allegations made against Mr. Ross by his sole accuser, YY.

2199. YY was formerly employed at TMI-1 as a part of the operating shift during a period which embraced the April 1981 NRC exams. In September 1981 he reported to the NRC inspectors and later testified that Mr. Ross had implied that he, Ross, had deliberately distracted the NRC examiner so that the candidates could cheat, and that Mr. Ross had convinced the NRC examiner to expand improperly the answer keys so that scoring would be unfairly liberal. YY also stated that Mr. Ross is the type of person who would purposely do such a thing. Without YY's testimony there would be no direct evidence against Mr. Ross, but Judge Milhollin's analysis includes his findings relative to other circumstances surrounding the episodes. He concludes that Mr. Ross did act to prevent proctoring and that Ross in bad faith brought about an improper expansion of the answer keys. We disagree with both conclusions.

2200. The basic allegation against Mr. Ross is founded on YY's inference drawn from a statement attributed by him to Ross. According to YY, Ross said that he, Ross:

> had gotten the NRC to expand the answer keys so as to give the examinees more latitude in their answers and also that he had kept the proctor out of the room for a very long period of time. The inference I [YY] drew was that by both actions he made it easier for the people taking the test.

YY's statement to NRC, Staff Ex. 27, Enclosure 1.

2201. The statement even as recalled by YY is equivocal. It is subject to a completely benign inference in that it could mean that Mr. Ross influenced the NRC to expand the answer keys accurately to fairly provide more latitude and that this process took a very long time. As equivocal as the statement is, YY equivocated even more in explaining the conversation from which the statement derived. He explained to the NRC investigators that while he believed that Ross had admitted deliberately facilitating cheating, it was also "possible that he could have been bragging." *Id.* It is clear from a review of YY's statements and the later testimony that when he and others use the term "bragging", or such, they are referring to untruthful bragging in the sense that Ross may have claimed to have facilitated cheating when in fact he had not.

2202. At the hearing YY testified that while *he* does not regard Ross' alleged incriminating statement as untruthful bragging, *others* might have regarded the statement as untrue. He testified that he had therefore clarified his statement to state also that Ross "could have been bragging." Tr. 26,015-16.

2203. Also in his testimony YY repeated his general allegation that he believed Mr. Ross would have acted and did act deliberately to facilitate cheating. Tr. 26,011, 26,015-16. However, in other portions of his testimony, he seems to state that any unfair advantage to the test candidates was an incidental result of normal procedures. He stated:

> Q . . . . Do you have any first-hand knowledge of Mr. Ross expanding the answer key to any NRC exam in order to give the examinees an unfair advantage in passing the exam?
>
> A In my statement I said and I still feel that Mr. Ross expanded the answer key under normal procedures. It was explained to me that that is a normal procedure, but I feel he also expanded the answer key and in doing that act of expansion he was able to facilitate keeping the proctor from the room for a long period of time; and that keeping the proctor from the room I understand is a normal thing, but I feel that since the proctor was out of the room, that the examinees might have had an unfair advantage which they would not have if the proctor was in the room all the time.

Tr. 26,022.

2204. In his testimony YY also explained that he did not report the reputed conversation until some five months later. Tr. 26,024-25. He stated that at the time he had been bothered because of the type of conversation, but that he had more or less become calloused by that type of conversation. Tr. 26,024. And as he further explained, the type of conversation to which he referred did not involve cheating, but bragging.[238] The clear meaning of YY's testimony is that, at the time the statement was made, he did not believe that Mr. Ross was admitting that he facilitated cheating. It was not until YY learned that O and W were fired for cheating, five months later, that YY may have decided that Ross had admitted to improper actions. Tr. 26,024-25.

2205. In sum: YY heard Mr. Ross make a statement, which even according to YY's recounting of it, as cited above, was not an admission of misconduct. Any sinister meaning depended upon YY's interpretation. The worst implication of YY's testimony is that YY believed that Ross' statement truthfully implied cheating but that others could reasonably have inferred untruthful bragging. Even YY did not think the reputed statement was an admission of cheating when made. He possibly came to that opinion five months later. Even then, it is not clear from his testimony, one way or the other, whether YY finally believed that Mr. Ross deliberately facilitated cheating. YY's allegations were probably honestly made; there is no evidence of malice.[239] But his testimony and perceptions of the meaning of the conversation attributed to Ross are too subjective, internally contradictory, and unreliable to be accepted by the Board.

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[238] "Q You said, I think, earlier that you had become I think you said callous towards conversations involving cheating. Is that correct or is that not correct?

"A No, that is not correct. My statement was that I had become calloused to certain types of conversation in the shift supervisor's office, and I think that statement was referring to the bragging that Mr. Ross did or the conversations that he had, the type of conversations that he had. He was a big talker." Tr. 26,030.

2206. Others, GG, KK, and RR, recalled statements by Ross (which could have been the basis of YY's inferences), to the effect that the candidates were not to worry in that they did all right on the exam and that he, Ross, ". . . took care of that job". *See* Staff Ex. 27, at 24, 26-27; Report at ¶¶143-44. Those witnesses inferred from Ross' comments that he had *fairly* broadened the answer keys, and that, apparently by joking, he was seeking to cheer his crew. *Id.* This would have been a very understandable message from Ross to his crew after months of training and a week of examinations. It does not indicate to the Board an improper motive. The views of GG, KK and RR seem more reasonable to the Board than the inferences drawn by YY.

2207. Mr. Ross denied that he deliberately hindered proctoring or that he improperly influenced the answer keys. He stated however, that he could have made some statements which the Board believes are those remembered as benign by GG, KK, and RR, and which also could have been the remarks overheard by YY.[240] His testimony did not persuade Judge Milhollin. It is true that his testimony was sometimes uncertain on the matter. It could hardly be otherwise. Mr. Ross had to defend himself against YY's accusations without even knowing who made the accusations or why he made them. YY testified after Mr. Ross testified.[241] To meet the charges completely, he had to postulate their bases. This is, of course, a due process consideration. But its immediate significance is that Mr. Ross' defense testimony must be measured in light of the fact that he has not been confronted with all the specifics of the accusations. Mr. Ross did however know the essence of the charges against him. He was provided an excised copy of YY's initial statement to the NRC. The statement was similar to his testimony.

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[239] After considering the Aamodt family's comments on the Board's draft findings on this issue, we have deleted language which implied that YY may have been motivated to make his charges "to get even" because, in his view, O and W were unfairly treated. We still do not know why YY waited to express his concerns, but it is equally possible that the seriousness of the incident with O and W caused him to reassess his understanding of Mr. Ross' alleged statement.

[240] In commenting on our draft findings, the Aamodt family stated that "the board concedes that Ross's testimony supported YY's description of the conversations concerning broadening of the answer keys." The Aamodts are flatly wrong; we made no such concession. In fact, Ross categorically denied the charge and could not even remember the conversation recounted by YY. He told the NRC investigators: "that it was possible that he discussed the review of the answer keys with a number of people since everyone was very interested in this and since suggesting necessary changes to the answers was the purpose of the review. He allowed as how he might have commented about how long the reviews had taken but stated that this would have been an observation and not a description of an attempt on his part to distract the proctor." Staff Ex. 27, at 12-13.

[241] While many company witnesses were assigned code letters to protect their identities from the public, they knew each other's actual identity even though sequestered as witnesses. In YY's case, however, the code letters were used to protect his identity from Licensee's personnel, including Mr. Ross. *See* Tr. 24,215; 24,217; 26,011-12. To this day, Mr. Ross may not know the full details of the charges against him or who made them.

2208. In our tentative draft findings on the Ross issues we noted our belief that some of Mr. Ross' testimony about time lapses seemed to be inaccurate in the direction of exoneration. This is a circumstance which we attribute to faulty recollection and a natural tendency to honestly recall events favoring one's own point of view. Other portions of his testimony we believed to be incredible but honestly rendered. As we noted in the draft, we were left particularly uncertain as to why Mr. Ross testified that he had never learned whether the changes in the answer keys were ever adopted, and that he did not know that one of the two examination rooms had been left unproctored during the answer key review.

2209. Licensee has now directed us to portions of Mr. Ross' testimony where he acknowledges that he had requested the changes, did not know for a fact that they were made (Tr. 24,161), but assumed that some were made (Tr. 24,334). The Board had incorrectly stated in the draft that Mr. Ross had stated to the candidates that changes were made, when in fact his statement was only that the key "was going to be fair". Tr. 24,180. As to the proctoring testimony, the Board had overlooked the fact that a *third* NRC official had been available for proctoring during the "A" exams. Thus, Mr. Ross would not have assumed that the room was necessarily unproctored when the examiner, Mr. Wilson, was busy with the answer key review. Neither the testimony on the answer key changes, nor on the proctoring is incredible, particularly when considered in the light of Mr. Ross' tendency to limit his testimony to his definite knowledge.

2210. Considering YY's accusations against Mr. Ross, and considering the inherent opportunity to adversely affect the validity of the examinations made possible by company review of NRC answer keys, Judge Milhollin very commendably analyzed a sampling of the April 1981 NRC operator exam questions. Report at ¶¶153-78. From the "A" exams he selected eleven questions where answer-key changes were made at the suggestion of the company reviewers and one where an attempt to change the answer key was rejected by the NRC examiner.

2211. As to nine of the examples Judge Milhollin correctly found that the changes were appropriately made in the direction of accuracy. As to one question, E.3 (the sixth analyzed by him), he found that the NRC examiner came to the exam with insufficient data. He therefore accepted answer data from the reviewers and an answer-key change. While Judge Milhollin does not question the change, he is unsettled by doubts about the accuracy of the supplied information. This question however is not used by Judge Milhollin as an example of improper efforts by Mr. Ross and the other company reviewers. Report at ¶169. We agree with this conclusion also.

2212. One of the two remaining questions analyzed by Judge Milhollin, question B.5.a on the "A" RO exam, asked:

a. What is the purpose of the #1 seal bypass line? Include how opening this line affects the #1 seal. Staff Ex. 33.

2213. The Staff's answer key to B.5.a originally stated:

> Lowers the pressure in the #1 seal area, offers lower head resistance to pump injection water, allows more injection flow to be diverted up shaft through the seal and past radial bearing. This prevents binding and contact of seal faces.

Staff Ex. 33 (at Exam B answers).

2214. The company reviewers apparently brought about several changes on the answer key. The first sentence was modified to delete "through the seal and" and to add at the end "for adequate cooling". Over the top of the first sentence was added "lower seal #1 Δ P". The entire second sentence was struck. The answer key as changed, then, was in the following form:

> [lowers seal #1 Δ P]
> Lowers the pressure in the #1 seal area, offers
> lower head resistance to pump injection water, allows
> more injection flow to be diverted up shaft ~~through the~~
> [for adequate cooling.]
> ~~seal and~~ past radial bearing. ~~This prevents binding~~
> ~~and contact of seal faces.~~

Id.

2215. Contrary to Licensee's analysis of Judge Milhollin's reasoning (Licensee Comments at ¶63), he did recognize that the added language "for adequate cooling" was intended to be a response to the first part of the question, *i.e.*, the purpose of the #1 seal by-pass line is to cool the radial bearing. Report at ¶156. Judge Milhollin, however, failed to give credit to the company reviewers for recommending this clarifying change. In fact all but one of the operators indicated the bearing-cooling effect in their answers. *See* Licensee Comments at n.2.

2216. However, once the NRC examiner agreed to drop the answer "This prevents binding and contact of seal faces" the answer key no longer seemed to satisfy the second question, "Include how opening this line affects the seal." This factor is central to Judge Milhollin's conclusion that the change was improper. This too was the basis for the Board's earlier tentative finding that that change to the answer key to question B.5.a was clearly improper.

2217. But, as we now know from Licensee's comments, both Judge Milhollin and the Board failed to note and to account for the phrase "lower seal #1 Δ P" inserted over the answer key. Therein may be found the solution to this puzzle, according to Licensee.

2218. Judge Milhollin found that eight candidates answered the second portion of this question as the Staff would have the answer but for Mr. Ross' intervention. But in Licensee's view, the answers provided by six of them suggest that opening the line *could cause rather than prevent* binding and contact of seal faces. These answers also suggest that this potential damage would occur by lowering the Δ P, or equalizing the pressure on the seal, thereby producing the potential for excessive wear on the #1 seal (along with the #2 seal). Licensee Comments at ¶65.

2219. Surely, as suggested by Licensee, opening of a bypass line on one side of a seal can lower the Δ P across the seal, hence reducing water flow through the seal. And if this water flow becomes low enough, it is possible to overheat, wear, and fail the seal. This scenario, as Licensee states, was described by some of the license candidates in their exams. *See* Licensee Comments at ¶63.

2220.ΔAlthough we cannot find from this record which answer is correct, we do find the change apparently recommended by the company reviewers is just as likely to be correct as the Staff's original answer. We therefore do not find that the change was incorrect or improper.

2221. The remaining question sampled, Question C.2.b (the fourth analyzed by Judge Milhollin), noted that pH control is important to minimize corrosion of primary and secondary components and that primary pH can vary from 4.6 to 8.5. Candidates were directed to: "Describe the *competing* effects that determine primary pH and cause it to vary in this manner." Emphasis added. The answer key required as a part of the answer: "Boric acid and lithium hydroxide concentrations compete." Report at ¶161. The reviewers argued for a change which would permit reporting only the manner of controlling pH with lithium hydroxide without reference to boric acid. Mr. Wilson refused to change. The candidates were about evenly split on including boric acid in their answers. *See* Licensee Comments at n.5 and n.6. Mr. Ross gave the partial answer, but another reviewer, Mr. Boltz, gave the full and correct answer. *Id.*

2222. Judge Milhollin finds that Mr. Ross and Mr. Boltz improperly argued for the change. Report at ¶166. We agree that the proposed change was properly rejected but we cannot find that the attempt was unconscionable in view of the difference between the chemistry lectures in training (the complete and correct answer) and actual plant practice.

2223. In reviewing the answers it is obvious that the candidates who did not include boric acid (and, for that matter, even those who did) recognize that primary pH is controlled by lithium hydroxide, not by boric acid. It is understandable why only lithium hydroxide would come to mind to some of them even though the *competing* effects are called for. It is clear however that the answer based upon actual plant practice would not respond literally to the question, which incidentally was inartfully worded in that it called for competing *effects*.

2224. Mr. Ross' and his colleagues' successful effort to change the seal-face question (B.5.a) and their attempt to change the primary pH question (C.2.b) are the bases for Judge Milhollin's conclusion that they acted in bad faith. Report at ¶177. The essential issue is not whether the changes recommended by Mr. Ross and the company reviewers were correct, but whether they were made in good faith. We were persuaded before, when we believed that the changes in the answer key to question B.5.a were clearly incorrect, that they were nevertheless made in good faith. Now that we have concluded that either explanation of the effect on the seal face is rational, there is even greater reason to conclude that the changes were suggested in good faith.

Conclusions: Mr. Ross

2225. We conclude that YY's accusations against Mr. Ross are incredible, an analysis of the two questions cited by Judge Milhollin leads us to the conclusion that the change recommendations were made in good faith, and there is no aspect of Mr. Ross' testimony bringing his candor into question. All of the charges made against him are unfounded. No misconduct may be imputed to the Licensee.

Radiation Work Permits: Harry E. Williams, Jr.

(Report at ¶179)

2226. Judge Milhollin correctly refused to accept the incredible testimony of the Aamodts' witness on Issue 6 (alleged cheating in a radiation work permit test in April 1979). No other evidence was presented in support of the issue, which is, therefore, resolved in favor of Licensee.

The Definition of "Management"

(Report at ¶¶181-183)

2227. Judge Milhollin explains that there is little value in choosing between Licensee's definition of management ("exempt [non-union] employees") and the Staff's definition (those who control the actions of more than one shift). We agree. We do not, however, adopt the portions of Judge Milhollin's analysis where he summarizes his findings as to the cheaters at TMI in that we depend on our own particular conclusions on the named individuals. It should be noted again that VV, who is said by Judge Milhollin to be a link between upper management and the operations staff (at ¶183), was not a member of TMI-1 management at any time relevant to this proceeding.

C. The Licensee's Response to the Cheating

(Report at ¶¶184-237)

2228. The Licensee's management responded to three different types of cheating: first, the cheating on the NRC examination in April 1981; second, the cheating on the weekly quizzes; third, the cheating by VV and O in 1979. In general Judge Milhollin gives the Licensee poor marks. We agree in some instances and in others we disagree. The first situation evaluated by Judge Milhollin relates to Licensee's reaction to the NRC investigation of the O and W cheating episodes.

Management Constraint on the NRC Investigation
(Report at ¶¶185-88)

2229. When the similarities on O's and W's NRC examination answers were discovered, the NRC's Office of Inspection and Enforcement (OIE) began the first investigation with which this reopened proceeding is concerned. O and W were interviewed by OIE investigators in Bethesda. GPU Nuclear President Arnold directed TMI-1 Vice President Hukill to make a management official available for the OIE interview if requested by either employee. O and W did elect to have a company representative sit in on their interviews. At the outset there was a confrontation between Mr. Hukill and OIE investigator, Mr. Baci, who wanted to interview O and W without management's presence. The matter was temporarily resolved when Mr. Arnold phoned OIE Director Stello who directed the investigators to permit the interviews in that investigation to proceed under the condition that the company personnel be advised that, at their option, a company representative could be present. Several employees in addition to O and W were interviewed with management present.

2230. By the time the second investigation began (the one concerning YY's allegations against Mr. Ross), Mr. Stello, having received legal advice, decided that a company representative need not be and should not be present. Mr. Arnold also had been advised by counsel that he may not require that a company representative be present. As a result, the remaining investigations proceeded without incident between the Licensee and OIE, and without management presence during NRC interviews. The NRC Staff believes that the company presence during the first interviews was inhibiting but that the overall effectiveness of the investigation of O and W was not affected. Since the evidence gathered against O and W was strong, we have to agree. The Staff does not believe that the company was motivated by a desire to constrain OIE. The Licensee states that the company did not intend to constrain the NRC's investigation, nor were its employees inhibited by management presence. Licensee points to a previous NRC practice of allowing company representatives to be present during on-site OIE interviews with utility personnel as an indication that it initially proceeded in good faith.

2231. Judge Milhollin concludes that this action by Licensee's management was improper, but he does not find that the NRC investigation actually was constrained, other than that there was a "burden on the flow of information". Report at ¶188. In the Board's view, this episode has received more attention than it warrants. It seems to be a situation where the regulatory scheme worked as intended. The regulated utility had different perspectives and responsibilities than those of the NRC. After the initial confrontation, the participants acted without friction.

2232. From the Licensee's point of view, Judge Milhollin recognized that Mr. Hukill's avowed purpose of making sure that his people were treated fairly was legitimate. We agree, but with some reservations in that this is not the Licensee's highest function. Conflicts of interest could interfere with that effort and the public had an interest in an unrestrained flow of information. We were more persuaded by Mr. Hukill's other reason for wishing to be present or represented. He explained that ". . . by attending, I would gain first-hand knowledge of the scope of the problem with which I was faced as Vice President of TMI-1." Hukill, ff. Tr. 23,913, at 9. Were it not for the possible inhibiting effect, it would be management's duty to be present at interviews to learn both the "scope" and the details of its problem. To meet its responsibilities to the public, the NRC, its ratepayers, owners and employees, management should have made every reasonable effort to stay on top of the NRC investigation.

2233. Licensee offers some examples of why it believes that Mr. Hukill was prudent in not wanting to rely upon the recollections and records of the OIE investigators to satisfy management's need to be informed. Licensee Proposed Finding ¶292. We have not paused to analyze these examples; it is unnecessary to do so to resolve this issue. A patent example comes to mind from our own evaluation of the incident with P and Mr. Husted. OIE investigator Ward believed that Mr. Husted solicited P for an examination answer (¶2148, *supra*), but because the alleged solicitation was thought to be unsuccessful, Mr. Ward and OIE management decided not to include the episode in the final OIE report. We have found of course that the evidence does not support that accusation against Mr. Husted. But Mr. Ward's opinion that Mr. Husted did solicit remains as a demonstration of the kind of information that Mr. Hukill should have had if Licensee's management were to be able to conduct the inquiry it is now faulted for not conducting.

2234. The NRC Staff's intuition that it should interview the company employees without management's presence was sound, and it correctly enforced this right after first faltering. The Board concludes that the incident is without important significance in this reopened proceeding.

Management's Dealings with O and W
(Report at ¶¶189-90)

2235. Judge Milhollin faults Licensee's management for not pursuing with O and W the reasons why they cheated. Mr. Arnold's position was that such inquiry would not have been productive in that Licensee would have to explore every potential reason for cheating regardless of the reasons given by O and W. We believe that Licensee passed up an opportunity to explore with O and W possible weaknesses in the training and examination programs, and to spotlight particular morale problems. Licensee admits that in retrospect Mr. Arnold probably should have asked them why they cheated. Comments at ¶95.

2236. Judge Milhollin concludes that the reason management did not need to ask was because it knew that the cheating was caused by disrespect for the NRC examination. Report at ¶190. Licensee, for reasons that are not apparent to the Board, seems stung by that conclusion. Comments at ¶95. On the other hand neither do we understand why Judge Milhollin selected that reason from among many possible reasons, and why he imputed that knowledge to Licensee. Our conclusion is merely that Licensee's decision not to pursue the matter was one of many judgments that had to be made and this one turned out wrong. In any event, O and W were examined thoroughly during the reopened hearing on the issue.

Management's Meeting with Employees

(Report at ¶191)

2237. After the discovery of the O and W cheating incident, Mr. Arnold, and then Mr. Hukill, met with the TMI-1 operations staff. There were several meetings, first with the entire staff, then by shift, then with each member of the staff. We are satisfied that the company made clear its attitude that cheating will not be tolerated and that this message was clearly understood. *E.g.*, Tr. 25,701 (GG). Management also explained that despite resistance by the operators, written examinations were required by the company and by the NRC as objective measures of their competence.

2238. Mr. Hukill explored with each operator whether he had cheated on any of the examinations and whether he knew of any other involved person. Licensee believes that the only example of additional cheating developed by these interviews was the incident reported by Mr. Shipman, which, as we noted above, remains unresolved. Judge Milhollin, however, finds that OO reported that "cheating on exams in [the] past has been commonplace and accepted." The cited evidence (TMIA Ex. 60) is Mr. Hukill's notes in which he recorded that OO stated that OO did not cheat nor does he know anyone who did, but that he heard "all kinds of rumors" that cheating on exams had been commonplace and accepted. *Id.* It is not clear what, if anything, was done about OO's report of rumors, as we discuss below at ¶2261.

2239. Of particular significance is the fact that management learned that the operators resented the reexamination requirement imposed upon them when other operators around the country are free from such requirements. Hukill, ff. Tr. 23,913, at 12.

2240. Judge Milhollin reached no conclusion about management's meeting with its employees. Our review of the evidence indicates that Licensee took appropriate actions to meet with its operators, both to receive information and to impart company policy on the need for the examinations and honesty. However, the record does not reflect what, if anything, management has accomplished in bringing about employee acceptance of the NRC's responsibility to ascertain by objective means that the TMI-1 operators are qualified.

Management's Response to the Shipman Incident

(Report at ¶¶192-95)

2241. The unidentified person who asked Mr. Shipman for an answer to an exam question was probably one of eight candidates in the smokers' room during the "A" exams in April 1981. *See* ¶2139, *supra*. While each of them was questioned in general by Mr. Hukill as to whether he cheated or knew of cheating, they were not interviewed concerning the particular incident with Mr. Shipman. Judge Milhollin explains why this would have been easy and useful and we agree. Licensee admits that the eight candidates should have been asked specifically about the incident. Comments at ¶98.

2242. We do not adopt the inference drawn by Judge Milhollin that "If the Licensee had been trying to find Mr. Shipman's questioner, such a step would have been strange to omit." Report at ¶193. We find no evidence that Licensee failed to conduct the interviews because it was deliberately not trying to identify cheaters.

Management's Response to Rumors about U

(Report at ¶¶196-99)

2243. The rumors that someone, perhaps U, was stationed outside the examination rooms to help the candidates cheat were very serious — particularly that aspect of the rumors that management had stationed such a person there for that purpose. ¶2171, *supra*. The Licensee did not investigate this rumor because the OIE investigators interviewed U on the subject. Wilson, ff. Tr. 24,478, at 14. Judge Milhollin lists several reasons why this omission was important and what more could have been done in this regard. Report at ¶198.[242]

2244. Licensee explains this failure by stating that Mr. Arnold had decided to ensure that there would be no actual or perceived interference with the NRC investigations, and therefore Licensee would not investigate a particular matter until the NRC had completed their [respective] investigation. Licensee Comments at ¶100, *citing* Arnold, ff. Tr. 23,590, at 5, and Tr. 24,607 (Wilson). Since this rumor had implications of potential management involvement in cheating, Licensee argues that the matter was particularly appropriate for the NRC pursuit and particularly inappropriate for management itself to pursue. Comments at ¶101.

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[242] In addition it appears that Mr. Hukill, during his program of interviewing each operator, overlooked asking U about the rumors that he used crib sheets. Tr. 24,079.

2245. Mr. Arnold's judgment to defer any investigation on a particular matter until the NRC had completed that aspect of the inquiry, was made in the context of the company interference perceived when management tried to be present during the OIE interviews of O and W. Arnold, ff. Tr. 23,590, at 5. It is a rational decision with which we do not disagree.

2246. The decision by Licensee's investigating attorney, John Wilson, not to investigate this rumor or even confront U with it because OIE did so was a very bad reflection on his judgment. And it is imputable to Licensee. Mr. Arnold's stated policy clearly was to investigate particular matters *after* the NRC, not *instead* of the NRC. We do not accept, in fact, we flatly reject Licensee counsel's argument that management involvement in the rumor was a justification for leaving the matter to the NRC for investigation. In our view, the higher the management alleged to be involved, the greater was Licensee's overall corporate responsibility independently to inform itself. Licensee deserves Judge Milhollin's strong rebuke on this failure. However, Licensee does not deserve the implication that it knowingly selected for investigation only matters unlikely to implicate management. Report at ¶199.

Management's Response to Cheating on Weekly Quizzes

(Report at ¶¶200-37)

2247. Licensee determined that one appropriate area for its investigation would be to review those exams and weekly quizzes required for initial qualification or requalification for NRC operating licenses.[243] *See* Licensee Proposed Finding ¶243; Tr. 24,495, 24,587-88 (Wilson). We find no fault with this approach. The material reviewed was voluminous and was the most important body of test information outside the NRC's own licensing examinations.

2248. Licensee selected Mr. Edward V. Trunk, an assistant professor of engineering at Pennsylvania State University, who was assisted by a colleague, Donald Miller, to evaluate the questions and answers on the company exams. As Judge Milhollin and the Board find, Messrs. Trunk and Miller identified many sets of suspicious parallelisms. In our view their work was thorough and competent. The material they reviewed was made available for examination by Judge Milhollin, the Board and the parties. Thus it has been carefully reviewed by many separate individuals seeking parallelisms in the answers. Although a few, less obvious, additional similarities were found, Messrs. Trunk and Miller appear to have identified most of them. Their assignment stopped at that point.

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[243] The "Kelly" exams, Category T make-up quizzes, ATTS exams not previously reviewed by the NRC, "Kelly" non-Category T make-up quizzes and a 1979 mock NRC exam were chosen for review.

2249. Licensee assigned its attorney, John Wilson, to investigate the parallelisms identified by Mr. Trunk and Mr. Miller. He was also assigned certain other tasks in Licensee's investigation of the cheating incidents. He was assisted by an associate, Mr. Lloyd. Judge Milhollin criticizes Mr. Wilson's work very severely as he analyzes Mr. Wilson's opinion on the parallelisms identified with respect to G and H; and MM, GG, and W.

2250. We begin our decision on this portion of Judge Milhollin's Report with a somewhat different approach to the issue compared to that of Judge Milhollin and the commenting parties. First, while we believe that Mr. Wilson was naive in accepting the denials of some of the candidates, too much has been made of his opinions, whether correct or not. It is not clear from the record whether he was presented as an expert on whether the parallelisms indicated cheating, or merely to explain factually Licensee's approach in investigating the parallelisms. His opinions on cheating have little value. He is not an expert in this field, and even if he were, it is for Judge Milhollin and the Board to arrive at their own respective opinions on these issues. This we have done after a direct examination of the evidence, including the testimony of those whose denials Mr. Wilson accepted. There was, however, some utility in presenting Mr. Wilson's opinions and their underlying logic. It permitted a testing of his, thus Licensee's, reasoning during the hearing.

a. G and H

(Report at ¶¶202-15)

2251. Judge Milhollin's analysis of why he believes Mr. Wilson performed poorly in his investigation of G's and H's parallel answers necessarily tracks very closely Judge Milhollin's and the Board's reasoning in concluding that G and H cooperated. *See* Report at ¶¶26-77 and ¶2096, *supra*. There is no need to repeat our analysis here. We depart from Judge Milhollin's analysis of Mr. Wilson's performance on several points however.

2252. Although we agree that Mr. Wilson unreasonably allowed G and H to convince him that the many parallelisms were not the result of cheating, we attribute this to naivete and to a possibly unconscious loyalty to the company and employees, *i.e.*, a natural inclination to believe in their honesty. It is true, as Judge Milhollin observes, that Mr. Wilson presented considerable information which tended to show the absence of cheating, and none, that we can identify that showed the presence of cheating. Report at ¶213. This circumstance we believe can be explained, in part, by the nature of the evidence possibly available in either direction. Common training materials, for example, to explain honest parallelisms are producible. Other than the parallelisms, and perhaps an observing witness, what kind of evidence tending to establish cheating by G and H could Mr. Wilson have found? Judge Milhollin, however, points to areas where Mr. Wilson could have but failed to inquire concerning circumstances conducive to cheating. One comes away from an appraisal of Mr. Wilson's investigation of G and H with the impression that he worked harder in developing exculpatory information than he did in developing evidence of cheating. *See* Report at ¶¶213-14.

2253. Judge Milhollin finds (at ¶210) that Mr. Wilson misrepresented statements by G and H on the very similar Bernoulli's equation answers. *See* ¶2104, *supra*. G and H had testified in a manner contradicting each other. Mr. Wilson's prepared testimony failed to reveal any contradiction where he recounted his earlier interviews with G and H. Wilson, ff. Tr. 24,478, at 8. Licensee takes strong issue with Judge Milhollin's findings concerning Mr. Wilson's candor. Comments at ¶110. Licensee's counsel argues that perhaps G and H ". . . provided subtly different answers earlier, during the Wilson interview." *Id.* In view of our own findings that the testimony by G and H on the Bernoulli's equation was incredible, we believe that it is reasonably possible that G or H did in fact provide information to Mr. Wilson which differed from their later testimony before Judge Milhollin. Also, it is possible that Mr. Wilson did not notice the contradictions. Accordingly, we do not find that Mr. Wilson misrepresented G's and H's explanation. Licensee cannot have it both ways, however. If G and H gave differing explanations to Mr. Wilson and to Judge Milhollin, it is an additional reflection upon their credibility.

b. S and Y
(Report at ¶216)

2254. Judge Milhollin finds that Mr. Wilson's methods and conclusions with respect to the parallelisms on S's and Y's answers were reasonable. We agree. This is not in dispute.

c. GG, W, and MM
(Report at ¶¶217-19)

2255. We came to about the same conclusions as did Mr. Wilson in the evaluations of the similarities among the answers of MM, GG and W. ¶2134, *supra*. Both the Board and Mr. Wilson concluded from uncertain evidence that W probably copied from GG. Judge Milhollin, however, found that the evidence suggests that GG copied from W, but found that, standing alone, the evidence would not support that conclusion. Neither the Board, Judge Milhollin nor Mr. Wilson reached any conclusion adverse to MM.

2256. It is not, therefore, Mr. Wilson's conclusions regarding MM, GG and W which bring about Judge Milhollin's criticism, but rather the adequacy of Mr. Wilson's investigation of the parallelisms. We agree with Judge Milhollin. In addition, we note that Mr. Wilson did not interview W because by that time he was no longer employed by Licensee. Wilson, ff. Tr. 24,478, at 12. We believe that he should have at least attempted to interview W nevertheless. As we found in our discussion of the incident, in view of the very strong and frequent parallelisms between GG's and W's answers, it must be concluded that GG knowingly condoned copying by W. Mr. Wilson simply accepted GG's statement that "W may have looked at his (GG's) exam without his (GG's) knowing." *Id.* at 12. Here we believe that Mr. Wilson was too easily convinced. If he had followed through with an interview of W, he might have been disabused of that naive conclusion.

Mr. Wilson's Performance Imputed to Licensee

2257. At this point in our initial decision we depart from the organization followed in the Special Master's Report. Here we note and summarize some of the additional deficiencies we believed to exist in Mr. Wilson's investigation and the significance of Mr. Wilson's performance to this proceeding.

2258. The scope of Mr. Wilson's assignment is not clearly set out in any one place. His testimony emphasizes the investigation of the parallelisms noted by Mr. Trunk and his colleague. Wilson, ff. Tr. 24,784, at 1. He also reported his investigation of two other sets of rumors. The first was the one about U having been placed near the examination room to aid the NRC license candidates (*id.* at 13-15), as to which we have criticized him for not even questioning U about the matter.

2259. His other assignments relate to those rumors among employees' wives to the effect that U had written notes on his hand and had used crib sheets in the April 1981 NRC examination. *Id.* at 15-17. As to this assignment, it appears that Mr. Wilson was very diligent. Along with Mr. Arnold, he optimistically tried to trace the source of these rumors. *Id.*

2260. Other portions of Mr. Wilson's testimony indicate that much of his time must have been spent in assisting the NRC investigators to arrange for interviews with the TMI-1 employees. *Id.* at 18-19. Apparently in recognition that we might perceive John Wilson's investigation as too limited, Licensee argues that it was reasonable in scope because other meetings and interviews were being conducted by Messrs. Arnold, Hukill, Herbein and Richard Wilson. Licensee Comments at ¶103.

2261. This we believe may be an indication that Licensee had a rather unstructured approach to the investigation, which in turn may explain why, when on October 12, 1981, OO reported to Mr. Hukill that OO had heard rumors that cheating had been commonplace and accepted (TMIA Ex. 60), no company official recognized the responsibility to investigate the matter further. This was the second time that Mr. Hukill had heard about OO's rumors. The first account he sent to Mr. John Wilson on July 30, 1981. TMIA Ex. 58. Mr. Wilson did nothing about the rumors. Mr. Hukill himself did not know whether Mr. Wilson or any other part of the company investigated OO's report. Tr. 23,925. Mr. Hukill regarded himself only as an observer, apparently because the NRC was in the first instance conducting an interview of OO. *Id.* It seems that the rumors heard by OO fell into the cracks during the company investigation. Fortunately OO was available to testify.

2262. On the subject of Mr. Wilson's investigation of the weekly quizzes, the Board agrees with the Commonwealth of Pennsylvania (Proposed Findings at ¶73.4), that there were several other important defects in Mr. Wilson's approach to the investigation. He simply accepted the oral denials of the suspected operators. Tr. 24,563 (Wilson). He should have taken their affidavits, or perhaps even have deposed them. That way, for example, any contradictions in the testimony by G and H would have been memorialized for careful analysis. Moreover, there is a greater incentive for truthfulness in statements under oath.

2263. In assessing the credibility of the suspected operators he did not evaluate their academic backgrounds. Tr. 24,626 (Wilson). He did not avail himself of Mr. Trunk or GPU technical personnel to determine whether the explanations given by the operators were technically credible. Tr. 24,599 (Wilson).

2264. And the most important criticism of all, also leveled by the Commonwealth, is that members of upper GPU management did not substantively review the results of Mr. Wilson's evaluation of the parallelisms. Commonwealth Proposed Finding ¶73.4, *citing* Tr. 23,955-56 (Hukill) and Tr. 23,880 (Arnold).

2265. Mr. Wilson indicated that he had spent virtually all of his time since the discovery of cheating to the time of his testimony at the hearing working on the investigation. Wilson, ff. Tr. 24,484, at 3. It is very likely that he did not have time to do all of the things we and Judge Milhollin believe that he should have done, but his testimony does not even acknowledge that more should have been done.

2266. Mr. Wilson's testimony does not give the impression of impartiality. Perhaps it would have been better if Licensee had employed a totally independent investigator to coordinate its inquiry, but we do not second-guess management on that account. After many years of legal service with Licensee, Mr. Wilson was already familiar with the TMI operations and personnel. As an attorney he was probably as well trained as anyone then available to interview Licensee's employees. Licensee could scarcely afford to waste time in organizing its investigation. Turning to Mr. Wilson is understandable. We conclude however, that Licensee was culpable in its uncritical acceptance of Mr. Wilson's work when there are so many indications of its inadequacy.

Conclusions on Licensee's Investigation

2267. It is very difficult to assess whether Licensee's investigation of the cheating incidents was adequate. For want of better standards we have evaluated the investigation with the traditional tests of whether the undertaking was well conceived and designed, whether sufficient resources were devoted to it, whether it was well executed, and whether it had good results.

2268. We find some fault with the concept and design of Licensee's investigation. Selecting Mr. Trunk and assigning an attorney full time to the inquiry was sound. The active participation of Mr. Arnold and Mr. Hukill lent the investigation useful prestige. We have noted however that there did not appear to be an overall coordinator or clearinghouse for information thereby allowing leads to go undeveloped, such as Mr. OO's report of rumors. On balance, however, we give a passing grade on the plan of investigation.

2269. There is no evidence that Licensee stinted in the resources allocated to the investigation. Both Mr. Trunk and Mr. John Wilson had assistance available to them. Mr. Richard Wilson, GPU Nuclear Vice President for Technical Functions, also participated in the investigation. Mr. Hukill invested a large amount of his time in meeting with the operating staff. Mr. Arnold was deeply involved even to the point where he interviewed employees about rumors among their wives. The very active participation of Messrs. Arnold and Hukill was also a very valuable contribution because it demonstrated to the operating staff that the highest level of Licensee's management was determined to correct the problem. We give a high grade on the resources committed and good intentions of Licensee management in the investigation.

2270. With respect to execution, our attention was naturally drawn to those areas where we would have proceeded differently. But the Board has had the benefit of a very large distillation process in that the parties and Judge Milhollin have spotlighted for us areas of deficiency. In the few months between the first revelations of cheating until the hearing began, Licensee had to make many decisions and there was no procedural manual to guide the investigators. We agree that every conceivable lead could not be followed. By the time the hearing began, with the sequestration order in effect, no further investigation by Licensee or the Staff was possible. The investigation did not go far enough in several areas, particularly where Licensee yielded to the NRC Staff some of its responsibilities. We also believe that there may have been a failure on the part of Mr. Arnold or Mr. Hukill to see the investigation through to the very end. A thorough evaluation of Mr. John Wilson's work, we believe, could have changed Licensee's positions as to G and H. As to execution of the investigation, we score Licensee somewhere on the border between failing and passing.

2271. One cannot measure the success of an investigation unless the expected results are known. We do not know if Licensee's investigation turned up all possible instances of cheating on company-administered exams, but we cannot infer that it was an unsuccessful inquiry. After intense scrutiny of the weekly examination papers and after thorough questioning under liberal cross-examination by intervenors and the Commonwealth, and after Judge Milhollin's own very careful inquiries, little was discovered in the way of concrete evidence of cheating beyond that disclosed by Licensee's own inquiries. Measuring Licensee's investigation by its results may not be sufficiently reliable to pronounce it successful, but neither can Licensee be failed on that basis. The Board concludes that the Licensee conducted an adequate investigation into the cheating incidents.

Management's Response to Cheating by VV and O in 1979

(Report at ¶¶220-37)

2272. VV was the supervisor of operations at TMI-2 as of July 1979 and until he was relieved of that assignment shortly thereafter. O is the person discussed throughout this proceeding as one of the cheaters on the April 1981 NRC licensing examination. The events involved in this incident do not directly relate to the reasons for reopening the evidentiary hearing. The matter is significant in that it relates to management's general response to cheating and the conduct of Gary Miller, who was then TMI station manager and who is now GPU Nuclear's start-up and test director.

2273. In August 1977, VV who then held a TMI-1 operator license, passed a cross-licensing exam for Unit 2 with an overall grade of 70%. Because of an NRC-required administrative procedure (Administrative Procedure 1006, TMIA Ex. 65) he had to participate in a special portion of the next company requalification program known as Fundamentals and System Review (FSR) in two areas where he scored less than 80%.[244] On his TMI-1 operator's requalification exam in February 1978 he passed, but this time he failed to score the needed 80% on three areas. On weak area was also a weak area on the cross-licensing exam, so he had to train in four FSR sections.

2274. He didn't attend FSR classes and therefore was given closed-book take-home exams which he didn't return. Because of a grace period, it wasn't until July 1, 1979 that he finally faced suspension from licensed duties. By then he was desperate. On the evening of July 1, 1979 he was faced with an absolute deadline, and he was also faced with vacation plans beginning the next day. After work VV induced O to help him. VV (or someone on his behalf) turned in O's work, in O's handwriting, as part of VV's own work. The training department detected the handwriting differences. O was absolved, VV was said to be disciplined for his conduct, and VV was later recertified to the NRC for his license renewal based in part, as we find, upon work done for him by O. The incident raised three issues: Did Licensee deal correctly with O; with VV; and with the NRC in recertifying VV?

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[244] Under current grading criteria an overall grade of 70% is not enough. The candidate must achieve 70% in each area and 80% overall. *See* PID ¶268, 14 NRC at 476, *citing* NUREG-0660, Task I.A.3.

Excusing O

(Report at ¶¶223-27)

2275. O denied that he knew that the work he did for VV was to aid him improperly on an exam. Mr. Miller, who took charge of the investigation, stated that he believed O and therefore took no action except to warn O not to do it again. O is no longer employed by Licensee; thus the only issue involving him is whether Mr. Miller was too easily convinced by O; or whether he was convinced at all — possibly he only stated that he was convinced. Judge Milhollin believes that Mr. Miller was correct in not imposing a greater sanction on O because O's status as VV's subordinate made it difficult for O to refuse to help. Report at ¶236. But Judge Milhollin implies that Mr. Miller should have admitted that was the reason, and he should not have advanced a theory that he believed O's lack of knowledge. *Id.* at ¶227.

2276. After evaluating the testimony and the exhibits, we believe that Mr. Miller was probably too easily convinced by O, but we cannot find from the record that Mr. Miller knew that O was deceiving him. Given the benefit of now knowing about O's willingness to cheat, and after a very thorough study of the circumstances, we can rather easily arrive at the conclusion that O must have known he was improperly helping VV. But considering the pressures on Mr. Miller in the months following the accident, O's excellent reputation and Mr. Miller's presumed concentration on VV's misconduct, we cannot find that he knew that O knowingly aided VV to cheat. Also, we are unwilling to infer what Miller's state of mind was about what O's state of mind was about VV's motives.

Sanctions Against VV

2277. After the training department graded VV's (and O's) work and noted the handwriting differences, VV was nevertheless given credit for O's help in his grade. But he failed to achieve 80% on two sections even with O's help. Therefore, VV was relieved of licensed duties and assigned to a requalification program with the thought of requalifying him for licensed duties.

2278. In the meantime, Mr. Miller confronted VV with the handwriting differences. VV readily admitted that O's input was not VV's own work, but stated that he had not tried to deceive the training department. Mr. Miller accepted VV's account based in part upon the fact that the instruction for the make-up exams did not expressly prohibit help (Miller, ff. Tr. 24,358, at 5), and in part upon VV's explanation that he believed that understanding the subject matter, not handwriting, was the significant factor. Tr. 24,396 (Miller). Licensee would have us find that Mr. Miller also acted on the belief that VV would have copied O's work into his own handwriting if he had been trying to deceive. Licensee Proposed Finding ¶312. However, Mr. Miller did not say this in his testimony. *See e.g.*, Tr. 24,396. An equally likely explanation is that VV, eager to go on vacation, simply took a chance. The latter explanation would be consistent with VV's known impatience with training assignments.

2279. We conclude that VV's statement that he didn't know that he couldn't turn in another's work as his own is incredible. Mr. Miller should not have accepted that account. But we recognize that Mr. Miller correctly concluded that, in any event, VV should have known that he had violated training policy. Mr. Miller's conclusion was that VV's poor judgment in this incident and VV's general lack of regard for the training program required a penalty. He recommended a one-week suspension without pay and recommended that a letter describing the situation be placed in VV's personnel file.

2280. Med Ed Vice President Herbein would have increased the suspension to two weeks, but Mr. Arnold decided instead that VV should be relieved as TMI-2 operations supervisor. It is the adequacy or inadequacy of Mr. Arnold's action that gives rise to the subissue of whether Licensee took effective action to discourage cheating.

2281. When the matter came to Mr. Arnold's attention he did not regard the episode as cheating, and did not recognize then that VV's deception involved his licensing requalification assignment. Tr. 23,707-08 (Arnold). Nevertheless Mr. Arnold regarded the incident as one more manifestation of VV's poor judgment and a part of "the total spectrum of concerns" about VV's performance as a manager. Tr. 23,710 (Arnold). Mr. Arnold decided that VV did not have the talents of a manager, and insisted that he be removed from supervisory duties. As a consequence VV was assigned to an *ad hoc* group gathering information about the accident at Unit 2 and today he holds a staff position involving liaison with outside organizations in research and development. This action was never discussed between Mr. Arnold and VV, but Arnold believes that it was widely recognized as an action unfavorable to VV's career. Tr. 23,772. VV was never told that his reassignment was punitive. Tr. 23,775-76 (Arnold). Mr. Miller, however, made it clear to VV that his conduct was unacceptable. Tr. 23,396 (Miller).

2282. VV did not receive a salary reduction, but the two positions counterpart to VV's previous position, the present operations managers of the TMI units, have each received salary increases at a much higher rate than VV has. Licensee Ex. 81A. Yet VV regarded his transfer as a lateral one, or at least professes that is the case. Tr. 26,642 (VV). VV did not regard his treatment as punitive and believes that the majority of his co-workers do not even know about the incident nor does he want them to know. Tr. 26,675 (VV). Some of the operators who testified on the subject did not believe that VV was demoted. Report at ¶232.

2283. Judge Milhollin concludes that Mr. Arnold's handling of the VV episode was deficient. Report at ¶237. First he finds that VV's reassignment was motivated by other indiscretions, not the training episode. We disagree. Mr. Arnold made it clear, and the general tenor of his testimony was that while there were previous problems with VV's performance as a manager, the episode on the training exam was the triggering event. *E.g.*, Tr. 23,732. There were no other examples of poor performance by VV identified which at the time could have been the immediate cause of his reassignment.

2284. Judge Milhollin does not believe that VV's reassignment was in fact a demotion, or sufficiently punitive to be a deterrent. Report at ¶236-37. To this we would demur. In most success-oriented hierarchies, removing a management person from a direct in-line operations position to a non-supervisory supporting staff position would be regarded as an adverse action. Certainly Mr. Arnold, with his Navy background, would regard VV's reassignment as a move out of a more promising career track. The fact that VV believes it was not a demotion, or says so, may simply be a manifestation of his own career aspirations. Or it may be that he does not want to accept or admit the significance of his transfer. Under the circumstances, it is likely that most of VV's peers in middle management saw his reassignment as a demotion, or at least as an impediment to advancement.

2285. Moreover we believe that Mr. Arnold's stated approach correctly minimized the question of whether VV was being punished. VV was by all accounts technically extremely competent. In fact when he finally focused on his training assignment he scored 99.8% on written exams. Mr. Arnold repeatedly praised VV's technical skills. He said that VV had "a sense for the plant, a feel for it." He was "comfortable with machinery, and how it works and how it interacts in a dynamic way." Tr. 23,757. He had performed well as a Senior Reactor Operator at TMI. VV had worked long and hard in the recovery of TMI-2 following the accident (Tr. 25,096 (Boger)), a fact which may have been a contributor to the problem VV faced in July 1979. His training delinquencies began before the accident, however.

2286. His skills and experience were sorely needed at TMI. VV was not, however, a very good manager. *E.g.*, Tr. 23,742 (Arnold). We infer that Judge Milhollin and intervenor TMIA believe that VV's reassignment should have been called a demotion, and that the demotion should have been specifically made known to VV and to the entire operations staff. Report at ¶¶236-37, 335. These actions, of course, would have humiliated VV. We have rarely seen competent managers attempt to solve their personnel problems in this manner, either in government, industry, commerce of academia. Moreover, a humiliation would have been very destructive, we believe, to VV's effectiveness, particularly in his ability to work with others. It would not have made a contribution to safety. In sum, we view Mr. Arnold's reassignment of VV to be an appropriate reallocation of company personnel resources. He prudently matched VV's abilities to the right job for him, or at least he corrected a mismatch. We do not find that VV's reassignment was an inadequate remedy to the problem.

Certifying VV to the NRC in 1979

(Report at ¶¶233-37)

2287. On August 3, 1979 Gary Miller, the TMI Station Manager, certified to Paul Collins, Chief of the NRC Operator Licensing Branch, that VV had satisfactorily completed the 1978-79 requalification program. TMIA Ex. 74. This certification is the center of an important issue as to whether Mr. Miller had certified VV to the NRC for license renewal knowing that O's improper assistance contributed to the completion of the requalification program by VV. We conclude below that he did and that there is reasonable cause to inquire further whether Mr. Miller, thus the Licensee, has made a false material statement in connection with the recertification of VV.

2288. The episode must be viewed against the background of the Commission operator's license regulations and the NRC-imposed administrative procedure for operator requalification. The Introduction to Appendix A to 10 CFR Part 55, Requalification Programs for Licensed Operators of Production and Utilization Facilities, provides in pertinent part:

> . . . Section 55.33 of 10 CFR requires that each licensed individual demonstrate his continued competence every two years in order for his license to be renewed. Competence may be demonstrated, in lieu of reexamination, by satisfactory completion of a requalification program which has been reviewed and approved by the Commission.

2289. Appendix A to Part 55 also contains the details of the Requalification Program Requirements which, in pertinent part, include:

> 4. *Evaluation*. The requalification program shall include:
>
> a. Annual written examinations which determine areas in which retraining is needed to upgrade licensed operator and senior operator knowledge.
>
> b. Written examinations which determine licensed operator's and senior operators' knowledge of subjects covered in the requalification program and provide a basis for evaluating their knowledge of abnormal and emergency procedures.
>
> c. Systematic observation and evaluation of the performance and competency of licensed operators and senior operators by supervisors and/or training staff members. . . .
>
> d. Simulation of emergency or abnormal conditions that may be accomplished by using the control panel of the facility involved or by using a simulator. . . .

e. Provisions for each licensed operator and senior operator to participate in an accelerated requalification program where performance evaluations conducted pursuant to paragraphs 4a through 4d clearly indicate the need.

2290. To comply with Part 55 (and Part 50), Licensee has its Administrative Procedure (AP) #1006, Operator Requalification Program. TMIA Ex. 65. AP #1006 tracks Appendix A to Part 55 very closely, and is not, as might be inferred from Licensee's Proposed Findings, a voluntary company program.

2291. Section 2.4 of AP #1006 provides for an annual written evaluation examination. It also calls for an annual oral evaluation, not relevant to the issue now before us.[245] The written examination simulates the normal NRC examination, and the results are used to identify specific Fundamentals and System Review (FSR) Program topics to be covered by the licensed operator during the subsequent annual requalification cycle. TMIA Ex. 65, at 10.0-11.0. If the operator scores less than 80% on any section of the annual written examinations, he is required to attend the respective FSR program. *Id.* at 12.0. In addition, if he scores below 80% in two or more sections in the annual written examinations he must be given an oral examination and evaluation by a qualified person.

2292. VV took the 1977/1978 written requalification examination in March 1978 and received less than 80% in:

Section A: Principles of Reactor Theory
Section E: Safety and Emergency Systems
Section G: Radiation Control
Section H: Fuel Handling and Core Parameters

TMIA Ex. 66, 74. As a result VV was required, or should have been required, to attend FSR lectures and to receive a grade of 80% on each topic. AP #1006, at 7.0, requires that "Performance on FSR assignments will be determined through written evaluation quizzes." TMIA Ex. 65, at 7.0. Moreover the procedure provided then that the quizzes be given, either closed or open book, but ". . . as classroom or on-shift quizzes." *Id.* There is no provision for take-home quizzes in the requalification program.

2293. On July 10, 1979 Mr. Zechman, Supervisor of Training, reviewed with Mr. Miller the status of VV's training deficiencies. TMIA Ex. 66. VV could not attend the FSR lectures in January 1979; he was sent take-home FSR assignment packages covering the four areas of deficiencies, which he didn't return; he received a second set in March 1979 which were not returned timely. Finally he submitted the completed FSR assignments on July 1 or 2, 1979. But Mr. Zechman noted and reported to Mr. Miller that the answers to Sections A and H were written by someone other than VV. *Id.* That, of course, was O's contribution. Mr. Zechman also informed Mr. Miller that AP #1006 requires *written* quizzes to satisfy the FSR program. *Id.*

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[245] The annual oral evaluation examination covers eight areas of plant procedures. TMIA Ex. 65, at 12.0. An unsatisfactory oral evaluation requires a discussion of deficiencies between the operator and a suitably qualified person, and a second oral examination. If the second oral performance is again unsatisfactory the operator is relieved of responsibilities and placed into an accelerated requalification program. *Id.* at 12.0. It should be noted that the procedure does not call for the operator to be assigned to the FSR program for deficiencies on the annual oral evaluation. We make this point to clarify that the questioned quizzes are not a part of the annual requalification oral evaluation, nor does Licensee or Mr. Miller assert that such is the case.

2294. Despite the fact that Mr. Zechman knew that the work on Section A, Principles of Reactor Theory, was not all VV's work, and despite the fact that Mr. Miller knew directly from O and VV that O had helped VV on Section A, the Training Department assigned VV a passing score of 89.1% on that section. TMIA Ex. 70. That exact score, 89.1%, is very significant, as will be seen below.

2295. Since even with O's help, VV did not attain 80% on Section H, Fuel Handling and Core Parameters, VV was assigned to the accelerated requalification program on that section, and on Section E. TMIA Ex. 72, 74. An important point to remember is that VV was not assigned to the accelerated requalification program on Section A. Not only does the initial FSR program require that satisfaction of the FSR topics be demonstrated by a written quiz, it requires that the operator be assigned to the accelerated requalification program where the candidate fails to score at least 80% on a given topic in the FSR. TMIA Ex. 65, at 12.0.

2296. On August 3, 1979 Mr. Miller wrote to Mr. Collins of the NRC that on retesting, VV had received *89.1% on Section A*, 80.5% on Section G, and, as a result of the accelerated requalification program, a score of 99.8% on the other two sections, E and H. TMIA Ex. 74. These would have been satisfactory scores on all four areas of weakness. The letter did not mention the incident involving O's help to VV. The August 3 letter was, we conclude, a false material statement to the NRC. It was the basis for VV's operator's license renewal.

2297. We have, of course, very carefully considered Mr. Miller's explanation of his August 3 certification to the NRC. He testified before the Special Master and, at the Board's invitation, his legal counsel submitted comments on the Special Master's Report.

2298. First, Mr. Miller makes the general statement that since he, Miller, did not regard VV's use of O's work as "cheating" he did not try to conceal cheating from the NRC.[246] *E.g.*, Miller Comments at 10.

2299. Second, Mr. Miller states he knew that Section A had been answered in part by O, but that he, Miller, had told the Training Department to have VV retested on Section A material. Miller Comments at 14. He testified that he had sent a formal memo to the Training Department requiring them to reexamine VV. But since the memo was not produced as evidence, we cannot determine Mr. Miller's specific instructions to the Training Department. Tr. 24,434 (Miller).

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[246] In addition, neither Mr. Arnold nor Licensee's counsel in their pleadings has acknowledged that VV's conduct constituted cheating. While this is disturbing, it is immaterial to the issue of why Mr. Miller certified a false score to the NRC.

2300. Mr. Miller stated on several occasions that the Training Department *orally* reexamined VV. Tr. 24,415; 24,419; Tr. 24,434-35. No documentation or corroboration of this fact was ever produced at the hearing. Appendix A to Part 55, Requalification Program Requirements, Item 5, requires that records be kept for a period of two years following the date of the recorded event to document the required participation of the licensed operator. The evidentiary record does not reveal who orally examined VV, or when, or whether the results were given to Mr. Miller orally or in writing. More than two years have passed from the asserted event until the beginning of the hearing, but other documents recording the VV-O episode survived. We would have expected some record of VV's oral examination. It was an important matter.

2301. Mr. Miller stated that, in a memorandum prepared by Mr. Zechman, Supervisor of Training, at Miller's direction, VV was told that he would have to be reexamined on the section that "he had passed" but was in "another's handwriting." Miller, ff. Tr. 24,358, at 2. But the July 11, 1979 memorandum referred to by Mr. Miller does not indicate that VV was to be reexamined orally. To the contrary, Mr. Zechman made a specific request to VV that he, VV, "re-do FSR assignment for Category A" and he attached a copy of that exam for VV's use. Staff Ex. 26, Enclosure 1, at 7. As we noted above, the FSR (Fundamentals and System Review) program requires written evaluation quizzes. TMIA Ex. 65, AP #1006, at 6.[247] Moreover, only the day before, Mr. Zechman had informed Mr. Miller that the FSR procedure requires *written* quizzes. TMIA Ex. 66. It would be absurd to infer that VV was again provided his FSR Section A quiz for take-home *oral* compliance.

2302. Mr. Miller testified further that as a result of the "oral" examination of VV, the Training Department determined that he had adequate knowledge of Section A. Tr. 24,415; 24,419; 24,434-35. At the hearing when VV was examined on the training consequences of having used O's work, he reported only having passed a *proctored* examination, and does not mention the oral exam referred to by Mr. Miller. Tr. 26,641, 26,665.

2303. The Board has read and reread Mr. Miller's testimony and comments to learn how it happened that the August 3 letter to the NRC contained the exact grade of 89.1% on Section A, when he makes no claim that 89.1% was coincidentally the grade received by VV on his "oral" examination. To this day neither Mr. Miller, his counsel, nor Licensee has directly commented upon the false statement to the NRC that VV had attained 89.1% on Section A. The matter remains unexplained. It is not disputed by Mr. Miller or Licensee that the only source for the 89.1% score was the grade given on work submitted by VV with O's input.

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[247] Here again the episode presents a disturbing aspect of the handling of VV. From Mr. Zechman's memo we infer that VV would again be trusted to requalify on Section A by another unauthorized take-home exam.

2304. Mr. Miller now states, through counsel, that the August 3 letter was not accurate and that, in retrospect, it should not have "suggested" that VV had passed Section 4. Comments at 14-15. The August 3 letter did not "suggest" that VV had passed with 89.1%; the letter stated in definite language that he had attained that score. *See* TMIA Ex. 74. Moreover, the statement by Mr. Miller's counsel (Comments at 13) that the sole purpose of the August 3 letter was to certify that VV attained a satisfactory rating on his accelerated retraining tests (only Sections E and H) is simply not in accord with the express language of the letter. Furthermore, if that had been the sole purpose of the letter, it would then not account for the two other Section weaknesses in VV's FSR reexaminations. That therefore would be a false certification as to his complete requalification.

2305. There is no doubt that Mr. Miller and other officials knew that VV's use of O's work was a matter of material relevance to his requalification and license renewal. On July 3, 1979, the day after VV's FSR exams were received by the Training Department, Mr. Miller sent a confidential memo to Mr. John Herbein, Met Ed Vice President. Mr. Miller noted that VV had submitted work not in his handwriting on the FSR quizzes and reported that "There will be problems", but "we need his license" and "If the exam which is not in proper hand script develops to a problem I will have an additional problem and will get to you." TMIA Ex. 62. Mr. Miller again reported to Mr. Herbein on July 27, 1979 that the "handwriting on two of the examinations did not appear to be [VV's]." TMIA Ex. 71. Before Mr. Miller sent the August 3, 1979 letter to the NRC certifying VV with a score of 89.1% on Section A, a draft of the letter was circulated to everyone on the distribution list, including Mr. Herbein. According to Mr. Miller, these persons were specifically aware of the facts and did not disagree with the content of the letter. Tr. 24,440 (Miller); TMIA Ex. 73, 74.

2306. From the foregoing evidence the Board concludes that Mr. Miller, with Mr. Herbein's knowledge and assent, falsely certified to the NRC that VV had attained a score of 89.1% on Section A, Principles of Reactor Theory, when in fact each of them knew that VV had not attained that score. This was a material certification upon which the NRC acted in renewing VV's operator's license.

2307. In addition there were other aspects of the August 3, 1979 certification which raise questions about how accurate and complete Mr. Miller's representations were. Putting aside for the moment the ethical considerations raised by O's assistance to VV, the certification letter did not reveal the fact that, contrary to the requirement of AP #1006, VV had not been assigned to the accelerated requalification program on Section A. TMIA Ex. 65, at 12.0. His test results on Section A of the FSR, considering O's help, should have been deemed a failure requiring accelerated requalification training. Nor did the letter reveal that the scores on Sections A and H were achieved on take-home quizzes, also contrary to AP #1006 requirements. *Id.* at 7.0.

2308. The NRC Staff takes a surprisingly mild position on the August 1979 certification issue. First they assert that VV should not have been certified because, under 10 CFR 55.10(a)(6), part of the certification is that the applicant for whom the license is sought has a need for the license in the performance of his duties. In that Staff believes that Licensee planned to relieve VV of his licensed duties at the time the certification was made, Staff's position is that he should not have been certified on that account. Staff Proposed Finding ¶154. We agree with Licensee's point that at the time it was prudent to maintain extra licensed personnel to account for attrition and illnesses and that Licensee's intent then was to remove VV from supervisory, not licensed duties. Licensee Proposed Finding ¶317.

2309. The second point made by the Staff is that, according to Staff, while Licensee was not required to bring the VV-O incident to the NRC's attention, information on the cheating incident might have been helpful. Staff Proposed Finding ¶154, *citing* Crocker at Tr. 25,102. For only these two identified reasons, Staff states that Licensee was in error to certify VV for license renewal. The Staff makes no recommendations as a consequence of that certification incident. More importantly, at no place in the Staff's testimony or in the proposed findings and comments before us does the Staff discuss the untrue representation in the August 3, 1979 letter to Mr. Collins. We do not understand this silence.

2310. We now come to the question of remedy and jurisdiction. The episode itself has an indirect relevance to our jurisdiction in the proceeding. It does not relate to the April 1981 NRC exams which caused the evidentiary record to be reopened, but it relates to the competence of Licensee's management, Licensee's certification procedures, and Licensee's policies to deter cheating. The latter are within our jurisdiction.

2311. However, the remedies we propose will require continued Staff activity and Commission attention after jurisdiction passes from this Board. We probably do not have the jurisdiction to enforce all of the remedies except for one specific condition we impose below. *Carolina Power and Light Company* (Shearon Harris, Units 1, 2, 3, and 4), CLI-80-12, 11 NRC 514 (1980). Therefore we approach the matter by making recommendations rather than ordering relief.

2312. We recommend that the Commission direct the Staff to conduct an investigation into the circumstances surrounding the August 3, 1979 certification. The Commission should satisfy itself that this will be an aggressive investigation. Office of Inspection and Enforcement did not pursue this matter, but we recognize that it would have been very difficult, probably even inappropriate for OIE to investigate the episode during the pendency of the reopened adjudicative proceeding. We are somewhat disconcerted however, because no component of the NRC Staff protested in this proceeding the false information in the certification to the NRC Operator Licensing Branch. Perhaps the Office of Inspector and Auditor should be enlisted to participate in any such investigation.

2313. The investigation should inquire into all of the uncertainties mentioned in the foregoing discussion of the certification for VV's renewal. In particular the investigation should develop all aspects of Mr. Miller's representation that VV was certified based upon an oral examination by the Training Department. All concerned should be reinterviewed, including VV, the persons who administered the test, and Mr. Miller. Records of any such oral testing should be produced, or the absence of such records ascertained and explained. The investigation should disclose VV's response to Mr. Zechman's memo of July 11, 1979 assigning him to "re-do FSR assignment for Category A". What did VV do with the exam Mr. Zechman attached to his memo for VV's use?

2314. All of the persons who were consulted in advance by Mr. Miller about this August 3 letter should be interviewed. These appear to be Messrs. Beers, Herbein, Lawyer, VV, and Zechman. TMIA Ex. 74; Tr. 24,440 (Miller). A determination should be made whether there was agreement among some or all of them to represent knowingly to the NRC that VV had attained an 89.1% score on Section A, or to make any other inaccurate representation to the NRC. The investigation should also reveal whether the Licensee has taken or intends to take any additional personnel action as a result of the certification incident, and a full statement as to Licensee's position of the entire matter should be reported.

2315. Intervenor TMIA urges the Board to find that all of the individuals who were involved in approving the August 1979 letter to the NRC should be found to be incompetent and that we should recommend that each be referred by the Commission for criminal prosecution. TMIA Comments at 6, 7. Judge Milhollin made no final conclusion or recommendation with respect to the certification of VV's renewal application.

2316. We can make no recommendation about the broader implications of the recommended investigation because we cannot predict its results. Mr. Herbein is no longer employed by GPU Nuclear and is beyond our jurisdiction. Messrs. Zechman, Beers and Lawyer are involved only to the extent that Mr. Miller states that they knew and approved of his action (Tr. 24,440 (Miller)), and of course, these individuals have not been given any opportunity to explain their role. Mr. Miller is indirectly connected to our jurisdiction because as Director of Start-up and Testing for GPU Nuclear, he presumably would participate in any restart of TMI-1.

2317. In the August 27, 1981 Partial Initial Decision on Management Issues, the Board noted that Mr. Miller (and Mr. Herbein) were the focus of various inquiries into alleged failures to disclose information following the TMI-2 accident. We made no findings then, but we explained that one of the reasons that we had not conducted our own inquiry into the information-flow allegations is because ". . . it appears to us that Mr. Miller is now in more of a support role rather than a role involving direct decision-making of line operating authority over the operation of TMI-1." 14 NRC at 545. We noted also that he would be connected only temporarily to any restart of Unit 1 when Licensee would be focusing all of its official and technical talent on the safe operation of the Unit. *Id.* Finally we noted that no questions had been raised about Mr. Miller's technical competence in our main proceeding and in connection with the information flow investigations. *Id.*

2318. Now we believe that the evidence produced in the reopened proceeding raises questions about Mr. Miller's ethical judgment and that we must address the matter. We make no finding against Mr. Miller directly. He should be given the opportunity to explain the questions raised by the Board during any investigation and in any forum that the Commission should determine to be appropriate. Our findings with respect to Mr. Miller are findings against only the Licensee as a party to this proceeding.

2319. Pending further resolution of the matter, the Board, within its jurisdiction, imposes an additional condition for the restart of TMI-1. In the interest of safety, we would not deprive Licensee of any available talent, including Mr. Miller's, in the start-up and testing of TMI-1. However, in view of our findings concerning his ethical judgment, we condition any restart of TMI-1 with the requirement that any participation by Mr. Miller in the start-up, testing or operation of Unit 1 must be under the direct supervision of an appropriately qualified Licensee official. We also direct the Licensee to preserve all records pertaining to the investigation recommended by the Board until further order of this Board, the Appeal Board, or the Commission.

2320. We conclude this discussion of the VV-O episode with the observation that the matter was first brought to the attention of the NRC at the instance of GPU Nuclear President Robert Arnold. We have found no evidence that there was any improper conduct at any level higher than Mr. Herbein's level. We also note that VV's Unit 1 license was voided some time ago; that Licensee does not plan to recertify VV for Unit 2 licensing, and that at no time relevant to this proceeding has VV been a member of the operations staff of Unit 1 or in a line of authority with respect to Unit 1. *See, e.g.,* Licensee Proposed Finding ¶320.

D. The Licensee's Training and Testing Program

(Report at ¶¶238-51)

2321. In the main proceeding the Board heard extensive evidence on the Licensee's training and testing program. *See* August 27 PID, 14 NRC at 441-78; Report at ¶¶238-39. Testing procedures were at issue and were especially the subject of certain contentions raised by Intervenor Aamodt. *See* for example August 27 PID, 14 NRC at 446-52, 460-64, 470-71. In addition the validity of certain of Licensee's testing procedures was the subject of questioning by the Board as we discuss below. On the basis of evidence presented by members of Licensee's management, Licensee's consultants, and the NRC Staff, we found that the Operator Accelerated Retraining Program had served adequately as an independent training and testing function, satisfying the requirement of Commission Order item 1(e) and that the Licensee had satisfied the requirements and retesting which the Commission had set down in its Orders of August 9, 1979 and March 6, 1980. August 27 PID, 14 NRC at 473-74, 478-79. In reaching this finding we also relied on the adequacy of the NRC operator examination as a final, independent, and accurate measure of the capability of an operator and a measure, in turn, of the quality of Licensee's training program. *Id.* at 454-55, 476-78.

2322. The disclosure of cheating on the April 1981 NRC examinations led us to retain jurisdiction to consider further the effect of the cheating investigation on portions of our August 27 PID, among them, the Licensee's training and testing program. *Id.* at 403.

2323. The validity of certain of Licensee's testing procedures was questioned by the NRC Staff in late 1980. On December 1, 1980, Paul Collins, Chief, Operator Licensing Branch, notified Mr. Hukill of deficiencies in Licensee's licensed operator qualification and requalification training program. Among specific deficiencies cited was inappropriate utilization of open-book quizzes, and the Board was particularly interested in whether this deficiency had been corrected. Tr. 12,599 (Little); *see also* Tr. 12,598-99 (Little, Gardner, Long) and Tr. 12,608-10 (Little, Kelly). On February 13, 1981, Dr. Robert Long, then Director of Training and Education of GPU's Nuclear Assurance Division located in Parsippany, reported to the Board that the deficiency in test administration had been corrected by changes in the relevant plant procedure:

> DR. LITTLE: Maybe Mr. Blake is going to address this, but I would like to have someone address the question I raised yesterday about the open-book examination, and whether that had been taken care of.
>
> CHAIRMAN SMITH: Are you going to do it now?
>
> DR. LONG: Yes, sir.
>
> The question you asked was about the December 1 letter from Mr. Collins of the NRC to Mr. Hukill. That was a letter commenting on the revised licensed operator qualification and requalification training program which had been submitted to the Commission for their approval. One of the concerns was that in that procedure, which is a plant procedure 1006, as submitted to the Commission allowed for — the wording specifically was "The quizzes may be administered in either the closed-book or open-book format."
>
> The Commission directed us that open-book was not satisfactory. The procedure has been changed. I believe the letter is going in today. It was due around February 15. The procedure now reads: "The quizzes shall be administered in the closed-book format."
>
> DR. LITTLE: Thank you.

Tr. 12,740. Evidently, actual implementation of the revised procedure was less than adequate as late as July 1981. Report at ¶250. The correction consisted of the changed language in Administrative Procedure (AP) 1006 and a notation on the front sheet of the test that it was to be taken "closed-book". In fact, the cheating incident and the reopened proceeding flowing from it appear to have been the first stimulus sufficient to cause Licensee to pull back the "paper curtain" and actually view its training and testing program at its point of delivery.

2324. Licensee now admits that its past training administrative practices were very loose, especially insofar as administration of quizzes during the regular cyclical training program for licensed operators. It was not clear to the operators that cooperation on quizzes was not acceptable. No specific instruction not to cheat was given. The use of unproctored, take-home exams permitted cooperation. Sometimes instructions were unclear as to whether quizzes were to be open or closed book. Some quizzes actually were answered as a group effort in that the crew concept was encouraged. Licensee Proposed Findings ¶¶220-333; Comment ¶130. We adopt wholeheartedly Licensee's Proposed Finding ¶333: "Overall, it is clear that Licensee did not give sufficient attention to preserving the integrity of its training and testing program." *See also* Licensee Reply Finding ¶17.

2325. Licensee not only admitted, but emphasized, its failure to identify this area of weakness in its training program. Licensee Proposed Findings ¶231-240, 326-28. However, going a step beyond *mea culpa*, the Licensee then takes what the Board considers a perilous position, that the "Licensee never stated, nor intended to suggest to the Board . . . that prior to the discovery of cheating on the NRC examinations, consideration had been given to establishing procedures against cheating on examinations," and consequently, "It is not reasonable to attribute to Licensee's efforts [on training and testing] in these regards, as the Special Master does, an unfulfilled promise to establish testing administrative procedures." Licensee Comment ¶130. Not only does the Special Master regard the testing deficiencies as an unfulfilled promise to establish testing administrative procedures, so does the Board, particularly in view of the assurances we received earlier. *See* for example, Tr. 12,598-99; 12,740. The assurances of testing integrity were implicit, if not explicit. Further, we were under the distinct impression that administrative procedures for testing were not only to be devised but to be implemented, based on the presentations made by Licensee's management. On the basis of Licensee's Comment ¶130 the Board is forced to conclude that we did not see what we thought we were seeing, and that Licensee's training and testing program was best described as the opposite of *esse quam videri* (to be, rather than to seem).

2326. Licensee's narrow interpretation of what it actually promised to do in regard to testing raises questions as to how far Licensing Boards must go in eliciting information from witnesses. Surely after being told that the examinations were closed-book, the Board should not have had to lower the level of the proceeding and embark, *sua sponte*, on a question-path such as "Does this mean the tests were proctored? Was the proctor actually proctoring or just present? Did 'closed-book' mean exactly that and there was no prohibition against oral cooperation?" Or should we have declined to accept the testimony of the Director of Training that examinations were given under appropriate conditions until he proved that he knew in fact that this was the case? If this is the pattern which must be followed, licensing proceedings will go on *ad infinitum*. If the Licensee relies on Licensing Board proceedings to ferret out deficiencies at this level of detail, there is indeed a serious void in the licensing process.

2327. Furthermore, Licensee has a self-interest in the first instance to assure that the operators entrusted with sophisticated and costly nuclear power plant investment are adequately qualified to do so and to realize that the operator's passing the NRC exam on one or two occasions is only a minimum requirement, not a guarantee of continued satisfactory performance. If the Licensee does not itself exercise the requisite quality control, quality assurance and feed-back mechanisms to assure high-quality training and testing, it is beyond the power of regulators and regulations to put an appropriate program in place.

2328. In its proposed findings Licensee has accurately captured our view of the most critical aspects of the cheating issue. We adopt Licensee's Proposed Findings ¶¶230-31, 235 in part or *in toto*, below.

> While we are satisfied that Licensee management did not directly know of or encourage cheating, nor were they involved in any manner in the cheating incidents . . . , the question of management's negligent failure to prevent this misconduct is a much more difficult question to resolve. . . . there were serious shortcomings in Licensee's administrative practices. . . . . . . we have made an effort to understand whether management held an attitude about integrity on the job, or about getting something done at whatever cost — *e.g.*, exams — which could have played a part in the cheating which has occurred.
>
> We consider the matter of management attitude and ethics perhaps to be of the most vital importance in our resolution of the facts of this case. As we stated in the PID, in considering whether Licensee's organization is qualified to operate TMI-1, the attitude of management towards the responsibility which would be entrusted to it was of major concern to us. [14 NRC at 428-32.] With respect to exam cheating, we have no doubt that specific procedures can be written and instituted at TMI-1 to minimize the likelihood of any such incidents in the future. [Citation omitted.] This is a fairly easy task to perform and to evaluate. More difficult to assess is whether management has a properly serious attitude about the subject, has inculcated its staff with a fundamental understanding of its responsibilities in this regard, and has established adequate lines of communication with its staff members to "reach" them on this subject. Generally, then, we have considered whether Licensee's management has provided us with not only direct assurances, but with more subtle indications of its ability to properly

> manage a nuclear power plant. In making our evaluation, we take into consideration the Special Master's impressions of the witnesses, as well as Licensee management's written and oral testimony, the Staff's views on this subject, and the opinions of Licensee's employees, particularly its operators.
>
> . . . [I]n retrospect, Mr. Arnold recognizes that management's failure to explicitly enunciate its policy on cheating or to establish and enforce the necessary safeguards, [citation omitted], were important deficiencies, given the consequences of this failure. Tr. 23,630-34 (Arnold). Mr. Arnold attributes these deficiencies to the trust management placed in the TMI-1 operators and the consequent failure to adequately acknowledge that when you take any group of individuals in the aggregate you have got to expect there are going to be some occasions of falling short. Thus, management failed to be sufficiently sensitive to the need to express the trust that it placed in its operators, and to safeguard that trust. Tr. 23,632-33 (Arnold). In addition, with the complete restructuring of the training program and department following the TMI-2 accident, management's major focus was on the quality and scope of training. Instituting exam procedures was simply overlooked. Tr. 23,633 (Arnold); *see also* Long, ff. Tr. 24,921, at 3.

2329. In the reopened proceeding, issue 9 concerned:

> The adequacy of Licensee's plans for improving the administration of future Licensee qualification examinations for licensed operators and candidates for operator licenses, including the need for independent administration and grading of such examinations.

2330. The Licensee has implemented a procedure applicable to the administration of all examinations by the Licensee or its contractors which provides for: (1) security against advanced leaking of the questions; (2) a clear indication of the ground rules for the exam, *e.g.*, open- or closed-book and a certification by the student that the work is his own; (3) procedure to avoid crib materials, to avoid close seating and for recording seating charts for major exams; (4) tests to be 100% proctored; (5) rules for leaving the examination room and; (6) reporting of student misconduct to appropriate authority. Long, ff. Tr. 24,921, at 25-26. *See also* Report at ¶250; Licensee Proposed Findings ¶¶347-49.

2331. While these procedures are appropriate, and should at least make cheating very difficult, the Board believes that Licensee has overlooked an additional and desirable safeguard against undetected cheating. Depending upon the examination and its importance, the Training Department should review a significant sampling of the examination answers for unexplained parallelisms. The NRC Staff has added such a step to its licensing procedures. ¶2361, *infra*. Therefore we will require as a part of our finding that the Licensee's examination procedures are now adequate, a step which requires a sampling of examination answers for evidence of cheating, using a review process approved by the NRC Staff.

2332. As does the Special Master, we view these new procedures with Licensee's past record in mind. Report at ¶250. Licensee's view, on the other hand, is that Licensee has fully learned its lesson and that the procedures which have been instituted will be fully complied with by the training staff. Licensee Proposed Finding ¶349. Further, Licensee's view is that it is neither necessary nor desirable to utilize independent consultants to conduct qualification exams at TMI-1, either as a substantive check on training or as an administrative check on adequacy of Licensee's testing procedures. Licensee's Proposed Finding ¶351. Licensee advocates reliance on its improved administrative process, its instructors, and finally on the NRC exam for valid verification of operator qualifications. Licensee Proposed Findings ¶¶353-54. Reliance on instructors leads us to the questions of quality assurance and quality control over the delivery of instruction at TMI-1.

2333. We fully recognize that quality of instruction was not directly an issue in the reopened proceeding, and consequently, that we have preserved limited jurisdiction in this area. Both Licensee and Staff challenge the emphasis given by the Special Master to this topic. Licensee's Comments ¶¶132-33; Staff Comments ¶¶8-13. *See also* Tr. 24,750-52.

2334. As pointed out by the Special Master (Report at ¶242), because memorization was an issue with respect to cheating there was considerable evidence on the method of instruction used in the Licensee's training program. Consequently, going beyond test administration and certification procedures, the Special Master found that the Licensee's training program was "weak in content and ineffective in its method of instruction." Our examination of the course *content* indicates to us that it is in compliance with 10 CFR 55. On the other hand, we agree with the Special Master that evidence presented in the reopened proceeding raises doubts about the *quality of instruction* (including delivery of instructional material, composition of examinations, and grading). Report at ¶¶242-51. Licensee does not admit deficiency in this area, with the exception of the Category T examination series discussed below.

2335. We begin our discussion of the quality of instruction at TMI with two observations:

(1) To date, Licensee's candidate performance level on the NRC operator licensing examinations has been satisfactory to the NRC Staff. Boger, ff. Tr. 25,480, at 2-3. Consequently, the Staff was, and is now, satisfied with the adequacy of Licensee's training program. Staff Proposed Findings ¶¶157-160; Staff Comment ¶12.

(2) This Board has previously reviewed and found adequate the training and testing program at TMI-1. 14 NRC 381 (1981), ¶165. We based this finding in large part on course outlines, Staff testimony, and opinions of expert witnesses who professed their knowledge of the Licensee's

training program. *Id.* We specifically found that successful completion of the NRC examinations, coupled with training to allow success on those examinations, was indicative of a capable licensed operator. *Id.* at ¶272.

2336. Based on the post-TMI-2 attention given to training one would anticipate a model program at TMI-1. Licensee has indicated that one of the reasons that it overlooked instituting exam procedures was because "with the complete restructuring of the training program and department following the TMI-2 accident, management's major focus was on the quality and scope of training" involving "major organizational and staffing changes" and "development of completely new programs for new and requalifying ROs and SROs." Licensee Proposed Findings ¶¶235, 326-27. GPU Nuclear's former Director of the Training and Education Department, Dr. Long, testified as to the adequacy of the methods of instruction. Licensee Proposed Finding ¶335.

2337. However, the record of the reopened proceeding has provided several indications of weakness in the quality of the instruction at TMI-1, such that we no longer have the assurance that there was sufficient quality control over the training and testing process. As noted below, however, we do not find that there was a failure of instruction — only that there were significant weaknesses which should be examined and their correction assured. The evidence suggests that the operators had reason to lack confidence in their preparation for the NRC examination because of confusion by instructors, as well as operators, as to what test answers were correct and/or acceptable (correct and acceptable were not necessarily synonymous). *See, for example,* Tr. 24,757; 24,766; 24,773-77; 24-782-85; 24,788-90 (Brown).

2338. Professor Trunk noticed inconsistency in grading on Licensee-administered tests, not only from test to test but within an individual's test session, leading to confusion by operators as to whether a given answer was acceptable or not. Tr. 24,516 (Wilson). Inconsistency in grading and lack of clarity as to answers expected is highlighted in the Special Master's examination of Nelson Brown, Supervisor, Licensed Operator Training at TMI-1, explaining how the Category T makeup examination taken by Mr. Ross and graded by Mr. Boltz was regraded by Mr. Brown, resulting in a change of score from 76.6 to 90.7. We will not repeat the convoluted rationale given by Mr. Brown for the changes; the answers given on redirect and cross-examination defy summarization. Tr. 24,660-75 (Brown, Milhollin); Tr. 24,773-77 (Brown, Blake). For specific examples, see Tr. 24,661-63 (Brown on acceptability of the answers "absorption of H_2" and "RC Coolant" to a question about how hydrogen is removed from the reactor building); Tr. 24,663-68 (Brown regarding acceptable answers to a question on "lessons learned" and the dependence of the answers on the opinion of the grader, *e.g.*, Brown, Boltz, or a contractor); Tr. 24,757-58 (regarding Brown's change in opinion about answers to this same question); and Tr. 24,776-77 (Brown explains how grading should be consistent with what was taught in the classroom).

2339. Since nuclear reactors are inanimate objects which operate according to natural laws, it would seem to follow that composing objective and unambiguous examination questions would be a relatively straightforward task in the hands of a competent instructor. For example, the natural laws governing pressure, volume, and temperature relationships in fluids are well-established, and further, for a given fluid, they operate without any known exceptions. Whether or not an instructor wants or "is looking for" a given answer is irrelevant; the relevant point is that training, and the testing which measures the training, must comport with reality.[248]

2340. One of the responsibilities of an instructor is to impress on the students the significance of important concepts and to test them in a manner which will indicate whether they have fully understood these concepts. Licensee does admit to shortcomings in these areas in relation to the Category T tests, the special audit examinations covering lessons learned from the TMI-2 accident. *See* August 14 PID, 14 NRC 454-55. Accordingly, we adopt verbatim (with citations omitted) Licensee's Proposed Findings ¶¶343-45, which detail serious criticisms of the administration of these tests:

> The first two rounds of Category T makeup tests included questions which are both identical and substantially similar. . . . In addition, the control room staff apparently were not aware of the significance of the Category T section, which was, during the first round of the make-up quizzes, administered simply as a portion of a weekly quiz. . . . Thus, four operators failed Category T three times. . . . Moreover, round 2 of the Category T was given as a nonproctored, closed book, take-home test. . . .
>
> We were somewhat relieved to hear from Mr. Newton that when he realized that some operators were not grasping the Category T subject matter or placing sufficient importance on it, he required in July, 1981, that the test be formally administered and that the content of the test be substantially changed. . . . In addition, a fourth Category T makeup quiz was administered in November, 1981, after the discovery of cheating on the April, 1981 NRC examinations and the concerns about collusion on the Category T makeup tests were raised through Mr. Trunk's investigations. . . .
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> The fourth Category T quiz was taken by all operators who did not pass the Category T portion of the Kelly exam, or who did not take the Kelly

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[248] We are reminded here of T. H. Huxley's comments on the rules of the game: "The chess-board is the world, the pieces are the phenomena of the universe, the rules of the game are what we call the laws of Nature. The player on the other side is hidden from us. We know that his play is always fair, just, and patient. But also we know, to our cost, that he never overlooks a mistake, or makes the smallest allowance for ignorance." *Lay Sermons*.

> exam. . . . The fourth makeup was preceded by a fairly short, but comprehensive review session. . . . From our review of the examination (along with the fifth makeup test administered to the one individual who failed to achieve 90 percent on the fourth makeup), as well as our understanding that Licensee's new exam administrative procedures were utilized and that the Staff approved of the exam, we are satisfied that the operators were sufficiently tested on this subject matter, given the thorough and conceptual nature of the test. . . . Nevertheless, we find it highly inappropriate that Licensee waited until such a late juncture — at least until July, 1981, and not until November, 1981 for many of the operators — to properly test operators on this material. Moreover, the repetition on the first two makeup tests of what appear to be less important Category T-related issues . . . , most assuredly encourages memorization, rather than understanding, of the subject matter. It also results in individuals focusing on passing the exam, rather than increasing their grasp of the subject matter, *i.e.*, coaching.

2341. Licensee's candid admission of the shortcomings on the Category T examination has been reassuring. Even without these admissions, however, the Board would be forced to the conclusion that the reopened proceeding demonstrated areas of significant weakness in the quality of instruction. The reach of this finding should be well understood however. There has been no systematic evaluation of the instructors' qualifications nor their methods. We have been reassured by, among other things, the fact that the operators as a group fared well on the October 1981 NRC examination. Moreover, the value of the instructors' command of the technical subject matter and their innate abilities to impart that knowledge on a one on one basis has not been examined. We do not find therefore that there has been a failure of instruction; only that weaknesses have been identified which should be pursued.

2342. Licensee asserts that the Special Master failed to consider a great deal of evidence in his analysis of Licensee's training program, including the opinions of Dr. Long, Mr. Newton, and Mr. Boger. Licensee Comment ¶145. The Board stresses that it did not rely primarily on the Special Master's Report in reaching its conclusions on the quality of instruction at TMI-1. As we indicated above we relied on the evidence of record relevant to the actual point of delivery, specifically the testimony of the instructors and examinees and the examination papers in evidence. With such first hand evidence the Board was able to reach its own conclusions without relying solely on the opinions of others.

2343. Licensee's stance is that the instruction has improved and that, anyway, *most* of the operators believe the training program is acceptable. Licensee Proposed Findings ¶¶339-41. We hold that another criterion is the relevant one — is the instruction adequate to prepare the operators to operate the plant safely?

2344. To answer this affirmatively, as required by the Commission's original order in this case, we find it necessary to impose remedies to provide the requisite "Quality assurance", as detailed below.

2345. These remedies are directed toward the Licensee which has the first responsibility for assuring operator competence. Licensee believes that "it is the Staff's intention to have periodic NRC requalifying exams when the staffing resources of the Operator Licensing Branch of NRR so allows." Licensee Proposed Finding ¶354. However the Staff in plain language has put the Board and the parties on notice that its role in auditing operator training and testing will not go beyond the usual regulatory requirements (*see* 10 CFR 55.20 and Appendix A(5) to Part 55), *i.e.*, auditability of the Licensee's requalification program and the administration of the NRC examination:

> The Staff has not reviewed the Licensee's plans for improving the administration of its future qualification examinations, nor has it required such plans to be submitted. It does not plan to evaluate the Licensee's future qualification plans. However, the Staff will evaluate the performance level of license candidates on NRC examinations. As in the past, the NRC will withdraw its acceptance of facility certification of candidates if the performance level is not satisfactory. In order to determine whether the performance level is satisfactory, the Staff compares the latest performance of the Licensee's candidates with the perceived industry norm and with their previous record to determine if the certification process effectiveness has changed. It should be noted that, to date, the Licensee's candidate performance level has been satisfactory to NRC. Boger, ff. Tr. 25,480, at 2-3.

Staff Proposed Finding ¶159.

2346. The Board does not fully understand the Staff's position. Part 55 requires more than NRC licensing examinations to assure that operators are competent. Applications for initial licenses and for license renewal both require a representation that the candidate has been successfully trained by the utility and has already learned to operate the controls in a competent and safe manner. 10 CFR 55.10(a)(6); 55.33(4); and Appendix A. Thus, as in many areas of nuclear safety, the regulatory scheme requires redundancy in safety. In this instance, both reliable utility training and testing and NRC examinations are expected to assure operator competence. Without periodic actual auditing of the Licensee's training and examination program, we cannot determine how the NRC Staff can be assured that the Licensee has met its training and testing obligations.

2347. We now set forth our remedies. The Special Master reached the conclusion that the Licensee's training program was an inadequate response to the Commission's Order of August 9, 1979. Report at ¶251. Should we find the program totally inadequate based on what we now know about the way it was administered, our remedies could include setting conditions which must be satisfied before restart. The extreme remedy, short of denying restart, would be a complete revamping of the training and testing program under the direct supervision of NRC Staff members who are capable of providing constructive criticism of the program, to be followed by retraining and retesting of the operators. On the other hand, we believe that the TMI-1 operators have already been exercised in too many tests because of factors beyond their control, *i.e.*, inept test administration by both Licensee management and the NRC license examiners. Regardless of the past history of training and testing at TMI-1, we are charged with assuring that operation of this plant is not inimical to the public health and safety. Consequently we impose the following conditions on TMI-1 to be satisfied within the first two years after any restart authorization:

(1) There shall be a two-year probationary period during which the Licensee's qualification and requalification testing and training program shall be subjected to an in-depth audit by independent auditors, approved by the Director of NRR, such auditors to have had no role in the TMI-1 restart proceedings.

(2) Licensee shall establish criteria for qualifications of training instructors to ensure a high level of competence in instruction, including knowledge of subjects taught, skill in presentation of knowledge, and preparation, administration, and evaluation of examinations.

(3) Licensee shall develop and implement an internal auditing procedure, based on unscheduled ("surprise") direct observation of the training and testing program at the point of delivery, such audits to be conducted by the Manager of Training and the Supervisor of Operator Training and not delegated.

(4) Licensee shall develop and implement a procedure for routine sampling and review of examination answers for evidence of cheating, using a review process approved by the NRC Staff.

E. The Licensee's System for Certifying Candidates

(Report at ¶¶252-59)

2348. Issue 12 considered:

> The sufficiency of management criteria and procedures for certification of operator license candidates to the NRC with respect to the integrity of such candidates and the sufficiency of the procedures with respect to the competence of such candidates.

2349. Commission regulations, 10 CFR 55.10 and 55.33, require the Licensee's certification of competency of operator candidates seeking to obtain or renew licenses. As of the April 1981 NRC examination, Licensee had no specific written certification procedure but relied on a meeting of management and training personnel during which candidates were evaluated according to performance on the Associated Technical Training Services (ATTS) requalification examination, during the training program, and on the job. Report at ¶253. The subjective evaluation by Mr. Ross of the operators' integrity and attitude was relied on. Licensee Proposed Finding ¶¶359-62. The candidates themselves were not interviewed. *Id.* The administrative procedures in effect during the ATTS examination were not adequate to prevent or to detect cheating. Report at ¶254. Poor performance on the ATTS examination was not a barrier to certification. *Id.* at ¶255. Evaluation of performance during training rested in turn on the sometimes perfunctory review of quizzes by the instructor. *Id.*

2350. Mr. Hukill admitted that Licensee "can be legitimately criticized for not formalizing our certification process by establishing a written certification procedure" but that he intended to establish such a procedure. Report at ¶258; Licensee Proposed Finding ¶364. The procedure would include signed statements from training personnel that operator candidates had indeed completed their training requirements. Report at ¶258. We believe that, if properly implemented, a formal certification procedure including such signed statements, founded on the trainer's evaluation of candidates by means of properly administered and graded examinations, will enhance the credibility of Licensee's certification process. We note further, our belief that as part of the certification process the senior management official charged with signing the certification to the NRC is obligated to review the candidate's personnel file and to take into consideration any information reflecting on the candidate's integrity and attitude.

2351. Such steps, when implemented, should eliminate the possibility of certifying candidates for the NRC examination who have cheated on internal examinations on one or more occasions. We agree with the Special Master (Report at ¶259) that Licensee had in its possession ample evidence that O and W, particularly O, should not have been certified for the April 1981 NRC examinations. The certification which permitted them to sit for the examinations was another essential link in the chain of events which ultimately resulted in this reopened proceeding. The certification process, therefore, is one of the critical control points for safeguarding the overall integrity of training and testing of the operators of nuclear power plants. In the case of O and W, had the steps we described above been taken this link in the chain of events would have been broken. We doubt whether even the upgraded certification procedures would have avoided the improper certification for VV's license renewal in August 1979 because it was with full knowledge that VV had not properly passed his requalification testing that the TMI station manager certified VV to the NRC. We trust, however, that the VV incident was an anomaly and that the present management of TMI-1 would not condone the procedure involved in that incident.

F. The NRC Examination

(Report at ¶¶260-87)

2352. Issue 10 considered:

> The adequacy of the administration of NRC licensing examinations for TMI-1 personnel, including proctoring, grading, and safeguarding the integrity of examination materials; the adequacy of the Staff's review of the administration of Licensee's Category T examinations; and the adequacy of the Staff's plan for retesting operators and monitoring its NRC examinations to assure proper adherence to NRC testing requirements in order to assure that the purposes of the NRC examinations, because of the nature of the questions, cannot be defeated by cheating, the use of crib sheets, undue coaching or other evasive devices.

2353. The NRC Staff presented an array of witnesses best qualified to testify about the NRC examinations in issue and the Staff operator licensing procedures. The witnesses from the Operator Licensing Branch of NRR were Paul F. Collins, Chief of the Branch (ff. Tr. 25,109); Bruce A. Wilson, Section Leader, Power and Research Reactor Group (ff. Tr. 25,481); and Bruce A. Boger, reactor engineer (ff. Tr. 25,480).

Proctoring and Grading

(Report at ¶¶260-68)

2354. The Special Master concluded that in regard to the April 1981 NRC-administered operator licensing examinations at TMI-1, the Staff was lax and its procedures were inadequate. Report at ¶339. The Staff does not challenge that conclusion (Staff Comment ¶16) nor does any other party. Neither does this Board. Consequently, the Board does not here recite all of the details of the admitted deficiencies which are described at length in the Special Master's Report (at ¶¶260-68) and the proposed findings of the Staff (¶¶163-78) and Licensee (¶¶381-395).

2355. Despite its admission of lax and inadequate test administration of the April 1981 examinations, the Staff would have us find that the administration was in full compliance with the governing standard, Operator Licensing Branch Standard ES-201, paragraph F. Staff Ex. 29, at 3; Staff Proposed Finding ¶163. This standard states:

> The examiner should make use of available facilities, in the manner he considers most satisfactory, to ensure the integrity of the examination. Use of facility proctors is permitted when circumstances require but should be avoided if possible. It is desirable that the examiner oversee the examination personally.

The Staff evidently is of the opinion that compliance with this standard could be met by having at least one NRC representative present at all times in the training building while the exams are being conducted. Staff Proposed Finding ¶166.

2356. The Staff points to the need for the examiners to spend time with members of Licensee's staff, *during the course of the written examination* in review of the examination, in compliance with another requirement of ES-201:

> At some time during the course of the written examination, the examiner should have a cognizant member of the facility staff review the examination so that any possible inappropriate questions may be discussed, and to ensure that all answers deemed correct are currently valid.

Staff Ex. 29, at 3. Staff's objectives in this review are to ensure that questions are clear, understandable, and germane to the particular facility and to ensure the current validity of the answers on NRC's answer key. *Id.*; Tr. 25,498-99 (Wilson); Staff Proposed Finding ¶167. Staff would also have us find that the Staff's review was in accordance with the applicable procedures. Staff Proposed Finding ¶170. As pointed out by Licensee (Proposed Finding ¶391), the proctoring situation at TMI-1 in April 1981 apparently was typical, except for the unusually large number of examinees. Tr. 25,511 (Wilson). Licensee's consultant, Mr. Kelly, a former NRC examiner, indicated that the Staff considered the proctor's primary function to be answering questions about the exam, rather than safeguarding against cheating. Tr. 24,898-99 (Kelly).

2357. We find that the review engaged in during the April 1981 examinations at TMI-1 was in literal compliance with ES-201. However, we do not believe that it was ever intended that compliance with the review portion of ES-201 would excuse such marginal compliance with the portion cited in ¶2355, *supra*. Only by the most liberal interpretation of this language could the Board find full compliance with ES-201 by the Staff in its safeguarding of the integrity of the April 1981 TMI-1 examinations. We decline to do so; the facts of the matter speak for themselves.

2358. We adopt that portion of Licensee's Proposed Finding ¶392 which states:

> Certainly the cheating which took place on the April, 1981 exams at TMI enunciated what should have been apparent to the Staff before; namely, that the risk associated with partial proctoring of examinations upon which the Staff places such significance is too great to ignore.

2359. The newly revised ES-201 (Rev. 3) sets forth proctoring requirements explicitly and, in contrast to the original, leaves little to the discretion of the examiner. Staff Ex. 30, at 15-16. We find that the new examination procedures, which were utilized for the October 1981 examination at TMI-1, should be adequate to safeguard the integrity of the *administration* of the examination, *i.e.*, prevention of cheating. Apart from the administrative aspects, we still have certain reservations, addressed below about the review procedure and its potential for violating the integrity of the grading of the examination. We also have reservations about whether the repetition of questions from one license exam to another can effectively defeat the purpose (and thereby the integrity and validity) of the NRC operator licensing examinations. These reservations, likewise, are discussed below.

2360. As summarized in the Report at ¶267, the Staff's grading of the April 1981 NRC examinations was at issue, as well. In fact, the cheating by O and W was not discovered by a member of the Staff but by one of its consultants, Mr. Monte Davis. Staff Ex. 24; Collins, ff. Tr. 25,109, at 5. While Mr. Davis found numerous and obvious similarities in the SRO "B" papers of O and W (Staff Ex. 24), Mr. Collins did not detect the same type of similarities when he graded the RO "B" papers, giving as one reason the large number (17) of examinations. Collins, ff. Tr. 25,109, at 5.

2361. New procedures will require a new form of grading to check for copying. Specifically, an NRC reviewer "must review in detail the answers and grades assigned for at least one question in 50% of the categories for 50% of the applicants." Staff Ex. 25; Report at ¶268. We do not know the basis for arriving at this auditing procedure, nor whether it will result in a valid sample. We recommend that the grading process be scrutinized by professionals trained in test design and administration. In the instant proceeding, we find that the new grading procedure was an improvement over the previous grading procedure and that it was adequate for the October 1981 examinations.

2362. Finally, we cannot help but recall the testimony of Staff (and Licensee) witnesses on Aamodt Contention 2 which led us earlier to rule against the Aamodts and in favor of the Staff on the adequacy of the NRC's licensed operator testing. 14 NRC at 476-77. The reopened proceeding afforded insights into the Staff's implementation of 10 CFR Part 55 which lead us now to have certain reservations about licensed operator testing, even in view of the changes which have been made since July 1981. While we recognize that our jurisdiction in this area has passed, we cannot in good conscience dismiss the subject without bringing certain matters to the Commission's attention. We do this in the following section.

Content of the NRC Examination

(Report at ¶¶269-81)

2363. In accordance with the Board's ruling, the *substantive* content of the NRC examinations was not an issue in this proceeding:

> The Board will not permit a relitigation as to whether the substance of the NRC operators' license examinations are technically adequate to assure that operators are qualified to operate the plant without endangering the health and safety of the public.

Unpublished memorandum and order of October 14, 1981, at 5. The issue to be examined was the *nature* of the questions on the written examination, *i.e.*, whether they were amenable to cheating or other devices which could defeat the purpose of the examination. Collateral issues related to whether the questions were framed in such a way that they necessitated broad, rather than specific, answers ("broadening the answer keys"), or whether they were so inartfully framed that they undermined the examination's credibility with the operators. Report at ¶269.

2364. In line with the Board's ruling, the Staff did not present evidence on the adequacy of the substantive content of the NRC examinations. Staff Comment ¶18. The Staff was justified in not presenting such evidence and incidentally, further justified in its observation that the Special Master had not taken into account in his criticism of the content of the examination the fact that the examination includes not only the written portion but an oral portion more oriented to evaluating problem-solving and analytical ability of the examinee. Staff Comments ¶¶19-20.

2365. In connection with the litigation of the specific issues in this reopened proceeding, NRC written examinations, answer keys, and answers were subjected to intense scrutiny. The Special Master perceived problems with the substance: (1) that keys for answers to questions were conformed to the information taught in training, rather than to the actual plant design, (2) that answer keys sometimes reflected obsolete or incomplete information, and (3) that the questions called for very specific design information which would require extensive memorization of not just factual information but specific phrases. Report at ¶¶270-79.

2366. The portion of the Special Master's Report on the substantive quality of the NRC examination has gone well beyond the jurisdiction delegated to him and our own jurisdiction. Nevertheless, in reviewing the evidence on which the Special Master relied, the Board is also concerned about the substance of the examinations. The evidence on substance, though uninvited, accompanied the evidence on the *nature* of the examination. It now lies before us and we cannot walk away from it.

2367. Memory plays an important part in passing tests or in operating a nuclear power plant. However there is a difference between questions which challenge the operator's memory as to how a plant is designed and built and questions which require an exact phrase by phrase answer based on training material. With respect to the twelve questions and answers that were put into the record, the Special Master concluded that the information sought was so detailed that no operator could have supplied it without memorization. Report at ¶278. We are not in a position to judge whether the questions asked for information that was beyond a competent operator's knowledge; however, it appears that graders expected the answers to correspond very closely to the answer key. It also appears that the wording of the answer was unduly emphasized; that in order to pass the NRC tests the operators had to memorize phrases from procedures or training material.

2368. For example, we are concerned with the grading of Question F.5.c which asked "Under what conditions may HPI be throttled after ESAS initiation during a LOCA?" The answer key properly included the condition ". . . action is necessary to prevent pressurizer from going off scale high." Operators who answered "to prevent RCS from going solid" were marked wrong. This is clearly a case where rote memorization of a procedure is required.

2369. In addition to his own observations on memorization, the Special Master has cited the opinion of a number of operators that word-for-word memorization of procedures was required to pass the exams. Report at ¶278. Many of those operators were of the opinion that the NRC exams were not a fair test of their ability to operate the plant.

2370. In looking for amenability of the examinations to cheating, one cannot fail to see, as well, their substantive content. We tread lightly in this area, however, because (1) we question our jurisdiction on this issue, (2) the parties had no opportunity to address it, and (3) we sense that the problems we glimpse may be generic rather than specific to the TMI-1 examinations.

2371. In its comment at ¶18, n.5, the Staff states:

> Additional analysis is being done by the Staff to further ensure, and maintain continual assurance, that the content of the NRC examination is valid. However, the studies that are underway are considering the entire examination process, not just the written examination in isolation. Therefore, the Staff has begun efforts to validate the examination content and process. These studies include a formal content analysis of the written examination questions to identify required cognitive functions and to classify questions by function. The staff is also considering a computer-assisted, automated system for written examination preparation. This system will allow the written examination to include a mix of questions that test for the skills and knowledge that the validity studies show should be included in the written portion of the examination. Other skills and knowledge will be covered in the operational portions, as they are currently.

2372. We strongly recommend that the Commission give high priority to the Staff's efforts to validate the NRC operators' examinations and to provide for whatever oversight is required to establish the credibility of these examinations with the operators who sit for them, the licensees which rely on this examination as the final control point in insuring operator competence, and the public whose health and safety are at risk.

The Review Process

(Report at ¶¶276-77, 285-86)

2373. The Special Master was especially concerned with the reliance by the Staff on the Licensee for answers to examination questions and he ultimately concluded that the degree of reliance was unacceptable and hence the content of the examination was inadequate. Report at ¶285.

2374. Here, his basis for undue reliance is an analysis of the twelve questions previously cited in connection with broadening of the answer keys. Report at ¶270-77. In some instances the NRC examiner framed questions to which he himself did not know the answers. We do not condemn that action entirely. We note however that some questions were not well framed, so that answers not anticipated by the examiner were deemed acceptable. We are particularly concerned with the Special Master's finding that some questions were based on unreliable or non-current information from the Licensee. Report at ¶277. It is by no means apparent that the fault lies entirely with the Licensee, since in some cases the examiner had misinterpreted the information supplied to him. *Id.*

2375. We do not share the Special Master's concern that the questions are too specific to the design of the particular plant. Report at ¶275. The site-specific nature of operator examinations is emphasized in Sections 55.20 through 55.23 of 10 CFR. However, we do agree that "to grade such questions accurately, the NRC examiner must have reliable, specific information about the design, and he must understand that material." It appears to us that the NRC examiners have not become thoroughly familiar with the design and procedures before making out the exam questions. To do so would require a large commitment on the part of the examiners and a considerable increase in Staff personnel. The inadequacies in staffing levels have been admitted by the NRC Staff. Report at ¶286.

2376. The issue of whether the scope of examinations should be broader than set forth in Section 55.20 is beyond our jurisdiction. Since the questions must be site-specific and design related, the examiner must rely to some extent on information provided by the Licensee. The Licensee is in the best position to provide current information reflecting modifications in plant design and operating procedures and to challenge the questions framed by the examiner if they appear to be based on misinterpretation. The crux of the matter is whether the existing examination preparation and review process presents a potential for compromising the independence, integrity, and validity of the NRC examination. The current review procedure does not, as one might reasonably expect, occur *before* the examination is administered, which would allow the examiner to verify any changes to questions or answer keys and to make carefully considered corrections, if necessary. The review process occurs *concurrently* with the exam administration, leading to "fixes" while the examinees are trying to answer the questions. We realize that the April 1981 TMI-1 examinations were unique in that all the TMI-1 operators had to take the exam, leaving no "disinterested" operator to review the examination beforehand. However, the concurrent review process, as outlined in ES-201, is the standard, not the exception. Staff Ex. 29.

2377. We do not have jurisdiction over formulation of generic Staff procedures for administering the examinations. We are obliged to point out to the Commission, however, the broader implications of the existing review process, as illustrated in this reopened proceeding. To evaluate a licensee's operator qualification program and the competence of the individual operator, the Staff relies primarily on the performance of the operators on the NRC license examination. Boger, ff. Tr. 25,480, at 3. Conversely, a licensee, with some justification, concludes that its operators are competent and its training program is adequate if the overall performance on the examination is satisfactory. *See*, for example, Licensee's Proposed Finding ¶381 and Staff's Proposed Finding ¶204. In essence, then, the NRC examination is to serve as an independent and external audit of operator competency. In the chain of events stretching from the operator's training to his actual operation of the plant, the NRC examination is the final link and the last control point. This control point affects not only the licensing of those individuals who take the examination, but it operates as a major "feedback control" to the Licensee's training program. Wherever the examination process is neither independent nor external, its audit value is impaired and there is the potential for abuse and for diminished credibility.

G. The NRC Staff's Response to the Cheating

(Report at ¶¶288-302)

2378. Issue 2 was:

> The adequacy of the Staff's investigation of, and NRC response to, the cheating incident and rumors of cheating in the April 1981 NRC examinations.

2379. The NRC Staff's response consisted of (1) making four investigations, (2) voiding the April 1981 TMI-1 examinations, (3) revising its procedures for proctoring and grading, and (4) administering new examinations under the revised procedures in October 1981. Report at ¶288.

2380. The first investigation was begun by the OIA, but OIA's role was terminated by Chairman Palladino and the investigation was transferred to OIE, which conducted three investigations. Report at ¶289. The investigation by the Staff of O and W led to their admission of guilt and their termination from licensed duties at TMI. Report at ¶289. The Special Master found that the Staff did a thorough and effective job in the investigation of O and W. Report at ¶¶289, 298, 341. We concur, and no party disagrees.

2381. The OIA investigation and the first OIE investigation concerned cheating by O and W, and whether cheating was limited to O and W. Report at ¶¶289-90. The second investigation investigated allegations by YY concerning Michael Ross (Report at ¶¶142, 292); a purported telephone call from U to KK during the April 1981 NRC examination (Report at ¶292); a rumor that U was stationed near the examination room to aid examinees (*id.* at ¶293), and a statement by P suggesting solicitation of an answer by Mr. Husted. *Id.* at ¶294. The third investigation concerned two events discovered by the Licensee: a purported telephone call to WW during the Kelly examination and Mr. Shipman's admission of giving an answer to another operator at the coffee stand. *Id.* at ¶295.

2382. In reference to the allegations about a telephone call made to KK, the Special Master concluded that the Staff did a thorough job of investigation. Report at ¶298. However, the Commonwealth disagreed. Commonwealth Proposed Finding ¶64. Consequently, we reviewed the documentation of the investigation. Staff Ex. 27. We concur with the Special Master that this investigation was adequate considering the elusive nature of the evidence and the fact that the question asked was not on the examination in progress at the time.

2383. The Special Master found that the Staff's investigation of the other allegation made by Mr. KK — that someone was stationed in the hall to assist examinees — was uneven (Report at ¶¶288-89), although he admits "Given the limits on the Staff's resources, these steps may not have seemed worthwhile at the time of the Staff's investigation." *Id.* at ¶299.

2384. In our review of the phone call incident a discrepancy was noted. The Commonwealth (Proposed Finding ¶64) stated that "More astoundingly, the Staff failed to interview Mr. O regarding his potential involvement in the Mr. U phone call. Tr. 26,258-59 (O)." Actually, O's testimony was somewhat confused at that point. Tr. 26,258-62. Later he noted that he was phoned by an NRC inspector in regard to this allegation (Tr. 26,272), and Staff Ex. 27, at 43, reports the content of this telephone interview. Therefore, the Staff did indeed interview O on this subject.

2385. On our own review of Staff Ex. 27, we also find adequate the Staff's investigation into allegations that someone was stationed near the exam room to provide assistance. The Staff interviewed and reinterviewed those Licensee personnel who would have been in a position to have answers on this subject and was unable to elicit evidence which would with certainty substantiate this allegation. Again, the nature of the evidence sought was at best elusive, based on memory of conversations, rather than on tangible documents.

2386. In regard to the Shipman incident, *i.e.*, Mr. Shipman's admission that he provided an answer to another operator during the NRC exam while at the coffee table, we concur with the Special Master that the Staff investigation was inadequate. In this case, the Licensee during its investigations into cheating yielded the information on the Shipman incident and Licensee promptly made this information available to the Staff. Staff Ex. 28. The Commonwealth, the findings of which we adopt in part, asserts that the Staff's response was inadequate. As the Commonwealth put it:

> The staff's investigation of this incident is detailed in the October 28, 1981 Report of Investigation. Staff Ex. 28. Essentially, the Staff's position regarding this incident is as follows:

> > Beyond FF's acknowledgement of his misconduct, he maintained that he was unable to recall either the identity of the other individual or the specific question he was asked. Lacking any logical leads, the NRC plans no further investigative action in this matter.
>
> Staff Ex. 28, at 8.
>
> The Board views this attitude as completely unacceptable. There were only 8 individuals in the room opposite Mr. Shipman's during the April 1981 NRC exam. Lic. Ex. 83. The Staff's basis for not interviewing these individuals is that 5 of these individuals had been interviewed previously, and made general denials of cheating. Tr. 25,371-72 (Ward) (referring to "time constraints" and "cost-benefit" principles in terms of investigation time). Tr. 25,362 (Baci). Again, the Board does not agree that general questions on cheating are a substitute for a probe of specific circumstances. Nor does the Board believe that 5 out of 8 is sufficient when there is a very high probability that one of the 8 individuals actually cheated, as is the case here. . . .

Commonwealth Proposed Findings ¶¶61-62.

2387. We do not agree with the Staff that since OIE had already interviewed, in a general fashion, five of the eight operators, getting negative answers, that it would have been unproductive to ask each of all eight specifically whether he knew of the Shipman incident. Staff Comment ¶28. Nor do we buy the argument that one cannot interview every individual who might have knowledge of the event (*id.*, and Staff Proposed Finding ¶95) when the total population size is only eight and when there is only one very specific question to be asked. Clearly, in view of the consequences which have flowed from the incident — for example, the hearing time required, the preparation of findings and comments, the sense of a question left unanswered — it would have been cost-effective to have completed the investigation when the time was ripe.

2388. Concerning the Shipman incident, it is the *Licensee's* view of the Staff's response which gives us the greatest pause, as it adds a new and, to us, distorted, perspective to explain the Staff's lack of diligence. We quote the Licensee's reply to Commonwealth's Proposed Findings ¶¶61-63:

> The Commonwealth faults OIE for investigating only five of the eight individuals who took the April, 1981 NRC exam in the room opposite Mr. Shipman. PA PF 61-63. We would agree, perhaps, that had Mr. Hukill not interviewed all TMI-1 operations staff members with respect to their knowledge of cheating, OIE could be faulted for not using its resources to interview the remaining three individuals. However, OIE clearly knew of Mr. Hukill's interviews prior to the commencement of its third investigation. Staff Ex. 28, at 2 (Licensee requested that OIE refrain from conducting its investigation until the Hukill interviews were completed; OIE

> agreed). We do not consider it to have been unreasonable for OIE to reply on the information Mr. Hukill gleaned from his interviews. . . .

Licensee Reply Finding ¶81.

2389. As we indicated above, we commend the Licensee's conducting its own investigation of the incident and giving the results to OIE. We entertain doubt as to the propriety of OIE's agreeing to wait for the completion of the Hukill interviews before starting its own. If, indeed, as Licensee implies, OIE *relied* on the information gained by Mr. Hukill's interviews we have no doubt that such reliance, if not coupled with a full and independent investigation by OIE, constituted an inadequate response.

2390. Continuing with his findings on the adequacy of the Staff's investigation, the Special Master concluded that Mr. Husted did indeed solicit an answer from Mr. P in the unproctored exam room. Report at ¶316. The Board did not find convincing the evidence that this solicitation occurred. ¶2157, *supra*. We could understand the Staff abandoning this issue on the basis that the investigators concluded that Mr. Husted merely made a rhetorical exclamation, not a solicitation. The Staff Comments ¶¶30-32 on the Report reflect this view. However, the Staff's proposed findings represent, to us, the Staff's attitude at a time closer to the actual investigation. It is the Staff's response to the potential cheating here that the Board finds peculiar. We cannot state it any better than did the Staff itself in its Proposed Finding ¶97:

> Mr. Ward [OIE investigator] was questioned extensively [during the hearing] on the subject of Mr. P's alleged statement to Mr. Ward that while Messrs. P and Husted were taking the April 1981 NRC SRO examination, Mr. Husted had solicited an answer to an examination question. Mr. Ward said that Mr. Husted's act did not constitute cheating because Mr. Husted did not receive an answer to his question. Tr. 25,415 (Ward). In addition, it was different from other incidents in that it did not raise the possibility of a conspiracy. Tr. 25,415-16 (Ward). The Director of OIE agreed that the alleged act did not fit into OIE's definition of cheating, for the purpose of the investigation. Tr. 25,418 (Ward). Mr. Ward also stated that the alleged solicitation was not directly relevant to the main thrust of the second OIE investigation, which concerned management involvement in cheating. Thus, since the writeup of the interview with Mr. P was intended to focus the facts upon the primary issue under investigation, Mr. Ward did not include Mr. P's alleged solicitation in that writeup. Tr. 25,417-18 (Ward).

2391. We disagree with the Staff and we find the response to the incident involving Mr. P and Mr. Husted to be woefully inadequate if the lack of follow-up was dictated by the considerations stated in Staff's Proposed Finding ¶97. We adopt in full the Special Master's statements (Report at ¶300), *i.e.*, that "there is no ethical or moral difference between an attempted solicitation and a successful one," that relevancy of the incident was not determined by which investigation was underway, and that there should have been a follow-up if the Staff had reason to believe the solicitation occurred.

2392. The adequacy of the Staff's response to the Trunk Reports was faulted by the Special Master, who concluded that the Staff's response was not to read them but to simply accept Mr. John Wilson's views regarding their significance, views which the Special Master found to lack basis. He found that the Staff should have pursued evidence in the Trunk Reports suggesting cooperation by certain examinees on Licensee-administered quizzes. Report at ¶¶297, 302. Staff disagreed and claimed that the evidence did not support a finding that OIE failed to review the Trunk Reports. Staff Comment ¶33; Staff Proposed Finding ¶74; Ward, ff. Tr. 25,274, at 4. Staff witness Ward tacitly acknowledged the Staff's reliance on the views of Mr. John Wilson, Licensee's counsel, and explained Staff's decision not to pursue the matter further. Ward, ff. Tr. 25,274, at 4; Tr. 25,337-38 (Ward, Clewett). The Board believes that since the Staff had the Trunk Reports at hand, it was inappropriate for the Staff to rely not on Professor Trunk's first hand opinion and analysis, but on the analysis of Licensee's counsel. Elsewhere in our decision, the Board gives its own reasons for declining to attribute weight to Mr. Wilson's views.

2393. Because we have made our own analysis of the Trunk Reports, the Staff's failure to conduct an independent investigation of this matter has no bearing on our findings on the major issues in this proceeding. In essence the hearings themselves constituted completion of the investigation. It is arguable that the Staff's response reflects unfavorably on Staff attitude. We would have been more favorably impressed with the Staff's response had it rested with a position that the Staff accepted the Trunk Report on its own merits and did not investigate further because of more pressing priorities and a lack of resources. Tr. 25,337-38 (Ward); Tr. 25,344 (Ward). Because we do recognize the time and resource restraints on the Staff, we find the extent of Staff's response to the Trunk Reports marginally adequate.

2394. We have previously analyzed in some detail (¶2169-86) the lack of definitive evidence as to whether or not U was involved in cheating and we concluded that U must be given the benefit of the doubt. The Special Master conceded that followup of rumors about U may not have seemed worthwhile to the Staff. Report at ¶299. Considering the elusive nature of the rumors surrounding U, we find the Staff's response was adequate and appropriate, considering the Staff's priorities, resources, and time constraints.

IV. CONCLUSIONS, RECOMMENDATIONS AND REMEDIES

2395. The Special Master reported his conclusions and recommendations with respect to individuals, the corporate Licensee and the performance of the NRC Staff at ¶¶303-44 of his Report. The Board however has explained its particular conclusions in each of these categories in the respective context of our findings of facts and the summaries of the decision above. Therefore we depart from tracking the Special Master's Report at this point and arrive at our own overall conclusions. We must consider the general effect this reopened proceeding has had upon the original mandate to this Board to determine whether the various short and long-term actions set out in the notice of hearing are necessary and sufficient to provide reasonable assurance that Unit 1 can be operated without endangering the health and safety of the public. 10 NRC at 148.

A. Management's Responsibility

2396. The Board has taken Mr. Hukill, GPU Nuclear Vice President for TMI-1, at his word when he admits to being naive with respect to cheating. Moreover we have found that Licensee's chief investigator, John Wilson, was naive in his conclusions concerning cheating by G and H and we believe that management, in turn, was naive in accepting those conclusions. Now it is our turn to consider whether the Board itself was naive in concluding in the management partial initial decision:

> On the basis of the extensive record developed on training, the Board finds that Licensee has in place at TMI-1 a comprehensive and acceptable training program. Since the accident, Licensee has substantially augmented its training department and headed it with professional educators who have backgrounds in nuclear training. Licensee's programs have been reviewed by NRC and by highly qualified independent consultants. The TMI-1 licensed operators have been trained, retrained, audited and reaudited by Licensee's training personnel and independent consultants. The operators have been exposed to training in the areas they should master before operating the plant.
>
> . . . . . .
>
> The Board generally finds Licensee's training adequate and specifically finds Licensee has complied with the Commission's August 9, 1979 and March 6, 1980 Orders insofar as they relate to training. . . .

August 27, 1981 PID ¶276, 14 NRC at 475.

2397. The Board was treated to a dazzling display of credentials in Licensee's case on its training program. Licensee employed a committee of nationally eminent experts to evaluate its Operator Accelerated Retraining Program (OARP). Dr. Julien N. Christensen is renowned for his work in research and education in human factors engineering. *Id.* at 462-63. Dr. Eric Gardner is widely respected as an expert in educational psychology with special expertise in educational psychological measurement, psychometrics, test construction and curriculum and program evaluation. Dr. William Kimel, Dean of the University of Missouri College of Engineering, represented nuclear engineering on the committee. Practical experience was represented by the manager of technical training for Duke Power, Richard Marzec, and Dr. Robert Uhrig, Vice President for Advanced Systems and Technology for Florida Power and Light. *Id.* at 453. Also involved in the construction of the training program curriculum were Babcock and Wilcox, Gilbert Associates and NUS Corporation. To consult and aid in the execution of its training program, Licensee retained PQS Corporation, headed by Frank Kelly, with experience including service as chief of AEC Operator Licensing Branch. *Id.* at 460.

2398. We were also impressed with the credentials and experience of Dr. Robert Long who was then Director of corporate Training and Education for GPU Nuclear with the Nuclear Assurance Division. His background included both nuclear engineering and education. He had been a long-time member of the Nuclear Engineering Department at the University of New Mexico where he served also as Department Chairman and Assistant Dean of the College of Engineering. *Id.* at 450. Similarly the Manager of Training at TMI-1 was Dr. Ronald A. Knief with a doctorate in nuclear engineering who also has experience in education at both the university and non-university levels. *Id.* at 444. Finally, the Supervisor of Operator Training at TMI-1 is Samuel Newton, a Naval Academy graduate with a masters degree from the Naval Post Graduate School. He had twelve years experience in the Navy's nuclear program. He supervises the thirteen licensed operator instructors. *Id.* at 445.

2399. After again evaluating our partial initial decision on Licensee's training program in light of the developments in the reopened proceeding, we remain convinced that the evidence supported the conclusion that Licensee's training program was well designed to train qualified operators and that there was a rational plan to implement the program. As we noted above, on the one occasion when the integrity of the examination procedures was questioned, the Board reasonably inferred that suitable action would be taken, *i.e.*, requalification tests would be "closed-book".

2400. We remain satisfied that Licensee was unstinting in the resources devoted to the training program. It cannot be faulted in the selection of the advice it sought for its training program, the credentials of its training managers or on the general design of its training program. The cheating episodes are not a reflection on upper-level management's competence, good intentions and efforts.

2401. Where, then did the program fail? Although the reopened proceeding did not cover the issue directly or fully, we believe that the answer is apparent from the record of the reopened and main proceedings. Our summary conclusion is that the integrity of Licensee's training and testing program failed because there was not a clear appreciation of which personnel or which component of Licensee's management had responsibility for the integrity of the program; and because there was a failure to apply the principles of quality assurance and quality control to the instruction and examination process.

2402. Mr. Hukill came to the hearing and accepted responsibility for the cheating of his operators and responsibility for seeing that examination administrative safeguards are in place. Hukill, ff. Tr. 25,913, at 2-5, 16. As the senior management person at the Unit, Mr. Hukill is responsible for its safe operation and is ultimately responsible for the competence of his operators and their discipline. He did well not to quibble about the details of his responsibility. The TMI-1 manager of operations, Michael Ross, also accepts responsibility for the cheating by his operators. Ross, ff. Tr. 24,127, at 5-6. But the fact is, it was the Division of Nuclear Assurance under its Vice President, John Herbein, and the Training and Education Department within that Division, under Dr. Long, which have the responsibility for preserving the integrity of the company's training program. 14 NRC at 443.

2403. In our management partial initial decision we noted with approval that Mr. Hukill as Vice President of Unit 1 would be relieved of all but minimum responsibilities not directly associated with the operation and maintenance of the unit so that he could devote full attention to those functions. We noted in that context that Nuclear Assurance would handle training for him. *Id.* at 415. The Division of Nuclear Assurance was to have been an independent division with the "same strength and status as operations would have; not a collateral duty for people who also have line responsibility." *Id.* at 406 *citing* Arnold at Tr. 11,438-40.

2404. As we understood Licensee's plan of organizing GPU Nuclear, the concept of placing training in the corporate Nuclear Assurance Division, which also houses Quality Assurance, Nuclear Safety Assessment, and Emergency Planning, was to provide independent quality assurance concepts to the training function in addition to relieving line management personnel of the responsibility for training.

2405. Quality Assurance programs, as required by Appendix B to Part 50, extend to operational safety quality as well as to machinery and structures. Training and verification of training of personnel whose activities affect quality are covered by Section II of Appendix B.

2406. Dr. Long has succeeded Mr. Herbein as Vice President of Nuclear Assurance.[249] While Dr. Long acknowledges that the omission of instructions leading to cheating was a mistake, he is "reluctant to be too self-critical on this subject because of the *implicit* understanding . . . that cheating is totally unacceptable behavior. . . ." [Underlining in testimony.] Long, ff. Tr. 24,925, at 3. He likens the problem to a factory, where ". . . one probably does not tell factory workers not to steal parts from the assembly line." *Id.* But neither does one allow one's factory to be stolen. This is where quality assurance and quality control come into play.

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[249] Letter dated March 11, 1982 from Licensee's counsel Blake to the Appeal Board.

2407. The Board could not determine from Dr. Long's testimony that he fully understands that his Training Department failed in its responsibility and that the failure was the principal and proximate cause of the breakdown in the integrity of the training and testing program. For example, as we noted above, the Training Department failed to include in its list of examination safeguards a provision for a post-examination sampling of answers for evidence of cheating — a measure which the NRC Staff has found necessary for its own examination integrity. Moreover the failure of the Training Department to assure the quality of its program extends also to a failure to assure the quality of the instruction.

2408. The Union of Concerned Scientists (UCS), in its post-hearing participation has led the Board through the management partial initial decision, and particularly through the partial initial decision on plant design and procedures where UCS was a very active party. 14 NRC 1211 (December 1981). UCS points out the many instances where the Board found that safety depends upon correct operator procedures and training and reminds us that we preserved jurisdiction because:

> The issues of Licensee's management integrity, the quality of its operating personnel, its ability to staff the facility adequately, its training and testing program, and the NRC process by which the operators would be tested and licensed, are all important issues considered in this partial initial decision.

14 NRC at 1708.

2409. UCS concludes that the reopened proceeding under the Special Master demonstrated that the TMI-1 operating staff is incompetent, that the operators cannot be relied upon to follow procedures essential to safe operations, and that the Board should immediately withdraw its restart authorization. UCS Comments, May 18, 1982, *passim*.

2410. Our answer to UCS is that we have not found the TMI-1 operators to be incompetent. Most of them were already licensed. Unlike operators' at other nuclear plants, they have had to take two additional initial NRC operators' license examinations. These have required a great amount of additional studying. We have reaffirmed that their training has included the best possible course content. Our major finding, it must be recalled, is that there was a failure of quality assurance of the integrity of the examination and quality assurance of the instruction. Although we are concerned about weaknesses in the quality of instruction, and have imposed conditions directed to that concern, we have not found that the instructors have failed to instruct. Nor have we found that the students failed to learn. Whatever the quality of instruction methods, the intense and repeated exposure to the course material necessarily must contribute to the competence of the operators. Finally, it must also be recalled that a major concern of the Board in preserving jurisdiction was doubt about whether the Licensee would be able to meet its staffing commitments for Unit 1. We have found that the operators have been reexamined by the

NRC under suitably controlled circumstances and we have reaffirmed that Condition 9 for the staffing of Unit 1 will and must be met. 14 NRC at 580-81.

B. Sanctions

2411. The Board imposes a $100,000 monetary penalty upon the Licensee because its management negligently failed to safeguard the integrity of its examination process, because it failed to instill an attitude of respect for the company and NRC examinations process, because it failed to assure the quality of training instruction and because of negligence in the procedures for certification of candidates for the NRC licensing examinations. No part of this penalty is related to the certification of VV to the NRC in August 1979. We cannot find from the original Notice of Hearing, 10 NRC 141, that the Commission anticipated a monetary penalty. However we do not read the Notice as foreclosing that remedy. We believe that such a penalty is desirable, thus necessary, in the long term to provide reasonable assurance that the Unit can be operated without endangering the public health and safety and payment of the penalty should be required. *Id.* at 148.

2412. If we were not convinced that the Licensee is capable of correcting and intends to correct the problems revealed by this reopened proceeding, with or without the penalty, we could not, as we do, conclude this proceeding in favor of restart. A penalty will be long remembered, however, and will emphasize the importance of the corrective administrative procedures to those charged with implementing them and with those charged with obedience to them. It will, we believe, remind those who, either by omission or commission, have created these problems, GG and Mr. Shipman, Dr. Long, G and H, for example, of the damage these episodes have caused their colleagues on the operating staff and their employer, and the erosion of the public confidence in their competence and integrity. The amount, $100,000, is not the result of mathematical calculation nor was it arrived at with the Commission's guidelines on Civil Penalties. This is a remedial, symbolic penalty intended to attract the attention of all interested parties.

2413. We recognize that the Licensee was not notified that a penalty might be assessed and has had no opportunity to address it. As noted, we find that it is a long-term remedial action. Therefore, it need not be imposed before restart. Whether it is appropriate and whether we have jurisdiction to impose it may, therefore, be the subject of the regular appellate process. If our jurisdiction should be found wanting, this action should be regarded as the Board's recommendation.

2414. With the exception of G and H, the Board has not imposed or recommended sanctions against any company personnel. There are several reasons for this. As we noted above in our recommendation that G and H accept a voluntary suspension, no individual member of Licensee's organization has been a party to this proceeding. None have had notice of possible penalties, and because of the sequestration order, they have not even had the opportunity to confront the evidence adduced against them. We have no authority to sanction any individual without a further proceeding. But where the evidence has been reliable and definite, and where the malfeasance has been substantial we have, in fact, recommended further procedures or sanctions, as in the case with G and H. And of course the Board could not ignore the question raised by the certification of VV to the NRC in August 1979.

2415. However, where the evidence has been uncertain (as with U) or where we have found the conduct not to be shocking, as with GG and Mr. Shipman, the Board has decided to let matters rest without further action, even though perfect justice might have required further redress. Also we are permitting the inquiry to end without further attempting to identify the persons who cheated by receiving answers from Mr. Shipman and WW. The Board believes this to be the wisest course, because we have no expectation that subsequent investigations or inquiries would improve upon the record made before Judge Milhollin. We also believe that it is time for the cheating inquiries to come to an end.

2416. The TMI-1 manager of operations testified that the operators are bitter about the repeated need to take the NRC examinations. Ross, ff. Tr. 24,127, at 5. And, as P testified, test candidates were rightfully annoyed that the failure to proctor the NRC examination created a situation in which their integrity could be challenged. Doubtless the TMI-1 operators have been the subject of community derision, and, according to O and W, even threats because of the cheating disclosures.

2417. There is no evidence whatever that the large majority of the TMI-1 operators lacked competence and integrity. They have good cause to be unhappy with their treatment. Although the Commission appropriately acted in the broader public interest, the effect of the Notice of Hearing in this case was to void the full-power operator licenses of all the TMI-1 control room staff without the scarcest element of due process. The need to take the second NRC reexamination in October 1981 wiped out the benefits fairly earned by the honest candidates who passed the April reexamination. The entire proceeding with respect to examination integrity, although necessary, has been demoralizing, unfair to the honest operators, and, we are concerned, it may have been a distraction from their duties as control room operators.

2418. Therefore the Board has selected sanctions which were intended to be definite, final and appropriate in the context of the present evidentiary record.

V. RECOMMENDATIONS, PENALTY AND CONDITIONS

2419. The Board recommends that:

(1) A proceeding be initiated pursuant to 10 CFR Part 2, subpart B, and 10 CFR 55.40 to consider the modification or suspension of the operators'

licenses of G and H unless during the Commission's immediate effectiveness review, the Licensee reports that G, H and the Licensee accept the Board's proposal that G and H voluntarily receive a two-week suspension without pay.

(2) The Commission direct the NRC Staff to conduct an investigation into the August 3, 1979 certification of VV to the NRC for operator's license renewal in accordance with the Board's discussion at ¶2313-14, *supra*.

(3) If it should be decided on review that the Board lacks jurisdiction to impose a monetary penalty on the Licensee, a penalty in the amount of $100,000 should be imposed by the Commission on the Licensee for negligent failure to safeguard the integrity of its examination process, failure to instill an attitude of respect for the company- and NRC-administered examinations, failure to assure the quality of training instruction and negligence in the procedures for the certification of candidates for the NRC licensing examinations.

2420. The Board imposes on the Licensee a monetary penalty in the amount of $100,000 as a long-term remedy to provide reasonable assurance that TMI-1 can be operated without endangering the public health and safety.

2421. The Board imposes the following conditions on the restart of TMI-1:

(1) There shall be a two-year probationary period during which the Licensee's qualification and requalification testing and training program shall be subjected to an in-depth audit by independent auditors, approved by the Director of NRR, such auditors to have had no role in the TMI-1 restart proceedings.

(2) Licensee shall establish criteria for qualifications of training instructors to ensure a high level of competence in instruction, including knowledge of subjects taught, skill in presentation of knowledge, and preparation, administration, and evaluation of examinations.

(3) Licensee shall develop and implement an internal auditing procedure, based on unscheduled ("surprise") direct observation of the training and testing program at the point of delivery, such audits to be conducted by the Manager of Training and the Supervisor of Operator Training and not delegated.

(4) Licensee shall develop and implement a procedure for routine sampling and review of examination answers for evidence of cheating, using a review process approved by the NRC Staff.

(5) Until further order in this proceeding, any participation of Gary P. Miller in the start-up, testing or operation of TMI-1 shall be under the direct supervision of an appropriately qualified official of GPU Nuclear Corporation.

2422. The Board directs the Licensee to preserve all records pertaining to the investigation recommended at ¶¶2312-14, *supra*.

VI. CONCLUSIONS OF LAW

2423. The Board concludes that in consideration of the findings, recommendations, and conditions set out above, the issues in the proceeding reopened by the Board's Order or September 14, 1981 have been resolved in favor of restarting Three Mile Island Unit 1 and that the conclusions of the Partial Initial Decisions of August 27, 1981, 14 NRC 381, and December 14, 1981, 14 NRC 1211, remain in effect.

VII. EFFECTIVENESS AND APPEALABILITY

2424. By Order of March 10, 1982 the Commission announced that it will not make any decisions regarding immediate effectiveness of the Board's partial initial decisions of August 27, 1981 and December 14, 1981 until the Board has rendered this decision. The parties were invited to file comments on whether this decision should be made immediately effective if it is favorable to restart. Our conclusions are favorable to restart. The Commission's Order provided that comments should be filed within fourteen (14) days after service of the Board's decision and that reply comments should be filed within seven (7) days after service of the initial comments.

2425. Within ten days after service of this Partial Initial Decision, any party may take an appeal to the Appeal Board by filing exceptions to all or portions of the decision. A brief in support of the exceptions shall be filed within thirty days thereafter or within forty days in the case of the Staff. 10 CFR 2.762. Any request to modify the time period set out in Section 2.762 should be made to the Appeal Board designated to hear the initial appeals.

THE ATOMIC SAFETY AND
LICENSING BOARD

Walter H. Jordan
ADMINISTRATIVE JUDGE

Linda W. Little
ADMINISTRATIVE JUDGE

Ivan W. Smith, Chairman
ADMINISTRATIVE LAW JUDGE

Directors' Decisions Under 10 CFR 2.206

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Cite as 16 NRC 387 (1982) **DD-82-7**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of **Docket No. 50-133**

PACIFIC GAS & ELECTRIC COMPANY
(Humboldt Bay Power Plant, Unit 3) **July 7, 1982**

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requests action to revoke the operating license for the Humboldt Bay plant and to decommission the facility.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

Mr. Ron Guenther by letter dated January 16, 1982 to the Atomic Safety and Licensing Board requested that the Humboldt Bay Power Plant, Unit No. 3 be decommissioned. That letter was resubmitted to the Director of Nuclear Reactor Regulation on February 20, 1982. Notice of receipt of this request was published in the *Federal Register* on April 4 1982 (47 *Fed. Reg.* 14632). Mr. Guenther submitted additional information to support his request by letter dated June 8, 1982.

Mr. Guenther asserts a number of reasons why the Humboldt Bay Plant should be decommissioned. After considering the request, for the reasons set forth below, I have concluded that the maintenance of the Humboldt Bay Plant in its present status does not adversely affect the public health and safety and therefore no basis exists to require the decommissioning of the Humboldt Bay Plant at this time. Accordingly, I have determined that Mr. Guenther's request must be denied.

I.

On July 2, 1976, the Humboldt Bay Plant was shut down for replacement of some of the fuel in the core. By Order dated May 21, 1976, the NRC required that before resuming operation, the Pacific Gas and Electric Company (the licensee) complete certain activities. The licensee was required to upgrade as necessary, the seismic capability of safety-related equipment (*e.g.*, the reactor coolant pressure boundary) to current requirements, and to resolve more recent seismic concerns having to do with earthquake vulnerability that had arisen since the time the operating license was issued on August 29, 1962.

The licensee has replaced the fuel in the core, undertaken extensive geological investigations, and completed some plant modifications. The question of future operation of the Humboldt Bay Plant is before a Licensing Board which on February 16, 1982 issued a Memorandum and Order which accepted the staff's conclusion that the Humboldt Bay Plant in its present shutdown condition poses no undue risk to the health and safety of the public. In addition, the Board established a time table for the licensee to decide whether it would resume operation of the plant or decommission it.

All of the issues which Mr. Guenther cited in his letters had been previously considered by the staff. The letters contained no new information or safety concerns unknown to the NRC. The seven issues raised by Mr. Guenther's letter that are within NRC jurisdiction are discussed in detail below. The other issues regarding economic impacts on ratepayers of a decision to decommission do not lie within the purview of the NRC and, therefore, are not addressed in this decision.

1. Plant Design and Operating History

Mr. Guenther's letter alleges that

> "The subject nuclear power plant is poorly and inadequately designed for safe operation, and has a long history of operating and safety failures deriving directly from design deficiencies."

As noted above, the Humboldt Bay facility is presently shut down. The NRC staff is not aware of previous problems of a type which would cause concern as to the ability of the licensee to maintain the plant in its present safe shutdown condition. The enclosed Staff Affidavits (Enclosure 1), originally submitted to the Atomic Safety and Licensing Board on November 19, 1981, describe the current status of the Plant and its recent inspection history.

Before approving the resumed operation of Humboldt Bay Power Plant Unit No. 3, the NRC staff will require correction of significant design deficiencies. The operating history of the plant will also be considered prior to approving resumed reactor operation, to the extent that the history is pertinent, considering the elapsed shutdown interval of greater than five years' duration. The staff considers the plant design, as well as its operational record, to be acceptable for the present shutdown condition of the plant.

2. Seismic Design

Mr. Guenther's letter also alleges that

> "Three earthquake faults have been discovered within 4,000 feet of the reactor, and appropriate design safety measures were not incorporated into either the reactor's design or construction. The subject plant does not conform to the Nuclear Regulatory Commission seismic standards. The cost of bringing the subject plant into compliance with these standards could exceed $300 million, compared with estimated decommissioning costs of $35 million. Decommissioning is therefore the preferred economic alternative."

The Humboldt Bay Plant was issued a provisional operating license in 1962 based on seismic design practices acceptable at that time. In the course of review associated with changing the provisional operating license to a full term operating license in 1969, questions arose which resulted in further seismic studies at the site. During the course of this seismic reevaluation, as the regional geologic picture was developed in greater detail, the confidence that the original plant design could withstand all postulated seismic events declined. For this reason the geologic/seismic investigations and the seismic design upgrading were required to be completed prior to restart from the 1976 refueling outage. Therefore, seismic design inadequacy has already been identified as a deficiency that must be corrected before approval of resumed operation. The decision of whether to incur the costs of implementing whatever design changes are deemed necessary or decommission the facility is one which the company and the state ratesetting body must make. Such economic decisions are not within the purview of the NRC.

Mr. Guenther's letter alleges that

> "The subject nuclear power plant's operating record is among the worst in the history of nuclear power. The public has been presented no convincing evidence that this sorry and irresponsible operating history will, or even can change for the better. The latest evidence indicates that the utility will continue to operate the subject plant in a negligent, irresponsible, and unsafe manner."

Humboldt Bay Power Plant No. 3 has been shut down since July 2, 1976. Since that time, the standard inspection (surveillance) program for a shutdown reactor has been performed by the NRC regional office at the Humboldt Bay Nuclear Power Plant. This inspection consists of inspections of design changes and modifications, activity of the Onsite Review Committee, QA program, overall training program, fire prevention and protection, surveillance of equipment during extended shutdown, security and material accountability, radiation protection program (as reported in news clipping attached to Mr. Guenther's June 6, 1982 letter), transportation of radioactive materials, and radioactive waste management. Recent inspections have not revealed any major problems at the plant (see attached affidavit of Tolbert Young). Before approving resumption of operation, the staff will review this operating record, the operational history of the plant prior to 1976, and other considerations to determine that the utility and operating staff are capable of safely operating the plant. The staff considers, based on our review of the operation of the facility since 1976, that the staffing and servicing of the plant are adequate for its present shutdown condition.

4. Disregard for Public Health and Safety

Mr. Guenther's letter alleges that

> "The utility has failed to comply with an Atomic Safety and Licensing Board order to reveal how the company expects to bring the subject power plant up to current Nuclear Regulatory Commission seismic standards. This latest example of the utility's continuing reckless disregard for the public health and safety indicates plant decommissioning as the only practicable solution for problems of public protection."

The Atomic Safety and Licensing Board has ordered (Memorandum and Order dated February 16, 1982) that the licensee report, at a future date, plans for long term use of the Humboldt Bay Plant, and in the meantime submit every three months, status reports to the Board. The licensee has submitted these reports, and the Board has not found the licensee's responses unacceptable. The staff does not regard the licensee's response to the Board Order as exhibiting any failure to comply nor as evidence of an attitude of disregard for public safety. In summary, the staff does not believe that the conduct of the utility during the proceedings before the Board represents a disregard for the public health or safety.

5. and 6. Economic Considerations

Mr. Guenther's letter alleges

> "The subject power plant is one of the oldest commercial nuclear power plants under the Board's jurisdiction. It went on line in 1963. Approximately ½ to ⅓ of the plant's life expectancy has elapsed. Decommissioning at this time would save future ratepayers substantial expenditures before embrittlement, increased residual radioactivity, and other safety problems become acute, and decommissioning costs rise dramatically."

and also

> "As the utility continues to engage in delaying tactics which prolong the process of solving public protection problems, it continues to maintain and

> to protect the subject plant. Since 1976 the costs of maintenance have been approximately $15 million. Decommissioning the plant would eliminate at least maintenance problems for core loadings, and would cut the necessary costs of plant surveillance until the plant could be either dismantled and moved to its final repository, or entombed in situ."

As previously noted, the impacts on ratepayers or shareholders of a utility's decision to operate or decommission its facility is not within the purview of the NRC.

7. Waste Disposal

Mr. Guenther's letter alleges that:

> "No permanent facility for safely disposing of the nuclear wastes deriving from the operation of the subject plant exists at this time. This would include the approximately 35 tons of high-level waste now being stored at the plant site at substantial risk to the public health and safety in the area, downwind, and downcurrent from the site."

The Department of Energy (DOE) is responsible for developing the methods and technology for the permanent disposal of high-level radioactive waste in a Federal repository and for submitting a license application for a potential repository. DOE is currently studying the feasibility of high-level waste disposal in deep geologic media. The Nuclear Regulatory Commission (NRC) has promulgated licensing procedures for disposal of high-level wastes in geologic repositories and has published proposed technical criteria.

In its present shutdown condition the Humboldt Bay Plant is not generating additional radioactive waste. The staff considers that the health and safety of the public is adequately protected from the radioactive waste presently stored at the Humboldt Bay Plant.

8. Population Density

Mr. Guenther's letter alleges that:

> "Human population densities exist only a very short distance from the subject plant site. As examples, heavily travelled Highway 101 is only 1,500 feet from the reactor. There exists a nearby residential community, beginning only ¼ mile from the plant. In case of accident, release of radioactivity from the plant would seriously endanger human life in the area. Additionally, cumulative losses of life could occur in areas downwind and downcurrent from the subject site."

The consequences and types of accidents are greatly diminished because of the present condition of the plant. Staff analysis has concluded that Humboldt Bay fuel has decayed sufficiently that air cooling is adequate to preserve fuel cladding integrity. Therefore, measures to assure core cooling or mitigate loss of coolant consequences are unnecessary. Due to the long period since the reactor last operated, mobile radioactivity has decayed very significantly.

Population density was considered in the original licensing of the Humboldt Bay Plant, as well as the possibility of population growth and redistribution. For the present shutdown condition of the plant, the population around the plant is adequately protected. The staff will consider changes in population density near the Humboldt Bay Plant before approving resumed plant operation.

9. Proximity of Humboldt Bay

Mr. Guenther's letter alleges that

> "Humboldt Bay is immediately proximate to the subject nuclear power plant site. Safety problems inherent in the plant's radioactive discharges on sealife, and on the human foodchain, have not been effectively recognized, evaluated or dealt with."

Before approving the resumption of operation for the Humboldt Bay Plant, the staff will perform any evaluations of the environmental effects of the operation of the Humboldt Bay Plant which might be required. As discussed in the response to Item 8, the significance of accidents is reduced by the present condition of the plant. In the plant's present shutdown condition, plant radioactive discharges are much less than when the plant was operating and are well within NRC regulatory limits. The releases are considered acceptable.

II.

Based on the foregoing I have determined that the requested decommissioning of the Humboldt Bay Power Plant, Unit No. 3 is not warranted. The health and safety of the public are adequately protected from the facility in its present shutdown condition. All safety issues pertinent to an operating reactor will be resolved before future operation of the Humboldt Bay facility is permitted. Consequently, Mr. Guenther's petition for decommissioning of the Humboldt Bay facility is denied.

A copy of this decision will be placed in the Commission's Public Document Room at 1717 H Street, NW, Washington, D.C. 20555 and in the local public document room at the Humboldt County Library, 636 F Street, Eureka, California 95501.

Additionally, a copy of this decision will be filed with the Secretary of the Commission for review by the Commission in accordance with 10 CFR Section 2.206(c) of the Commission's regulations. As provided in 10 CFR 2.206(c), this decision will constitute final action of the Commission twenty-five (25) days after the date of issuance, unless the Commission on its own motion institutes the review of this decision within that time.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 7th day of July 1982.

(The enclosures have been omitted from this publication but may be found in the Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.)

Cite as 16 NRC 394 (1982) **DD-82-8**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of **Docket Nos. 50-443**
50-444
(10 CFR 2.206)

PUBLIC SERVICE COMPANY OF
NEW HAMPSHIRE
(Seabrook Nuclear Station,
Units 1 & 2) **July 6, 1982**

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requested initiation of show-cause proceedings on the basis of the licensee's alleged lack of financial qualifications.

TECHNICAL ISSUE DISCUSSED: FINANCIAL QUALIFICATIONS

In light of the elimination of the Commission's financial qualification requirements, the Director of Nuclear Reactor Regulation denies a request for initiation of show-cause proceedings in the absence of a connection between alleged financial constraints and a particular safety problem.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

On February 5, 1982, Mr. Robert A. Backus, on behalf of the Seacoast Anti-Pollution League, submitted a petition under 10 CFR 2.206 requesting that the Director of Nuclear Reactor Regulation issue an order to show cause why Construction Permits Nos. CPPR-135 and CPPR-136 of the Public Service Company of New Hampshire (PSCNH) should not be suspended or revoked because of an alleged lack of financial qualification.

Effective March 31, 1982, the Commission's regulations were amended eliminating the financial qualification requirements. 47 *Fed. Reg.* 13750 (March 31, 1982). This action was taken after careful study and extensive consideration of public comments. The reasons for eliminating these requirements included the Commission's determination that the financial condition of a utility, in and of itself, does not affect the quality of the construction and operation of a nuclear power plant in a manner which is direct enough to warrant the expenditure of the substantial amount of the Commission's resources necessary for its evaluation. It was decided that these resources would be better used if directed to the examination of those factors which affect the public health and safety more directly.

The Commission continues to be concerned with the radiological protection of the public health and safety in all aspects of the construction and operation of nuclear power plants. In those instances where financial constraints of a utility can be directly connected to a particular public health and safety problem, the Commission will take the appropriate action. However, the petitioner has raised no such connection in his petition, and routine inspections to date have revealed no degradation of quality assurance in the construction of the Seabrook facility. Furthermore, as part of the nationwide NRC inspection program, a Construction Assessment Team is currently investigating the quality of construction at the Seabrook facility. The results of the investigation will be examined to insure that proper quality assurance programs are being followed.

Financial constraints, in a vacuum, are an insufficient basis for initiating show-cause proceedings against a utility. In light of this, the petitioner's request is hereby *denied*.

A copy of this decision will be filed with the Secretary of the Commission for the Commission's review in accordance with 10 CFR 2.206(c).

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 6th day of July 1982.

Cite as 16 NRC 396 (1982) **DD-82-9**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-373
50-374
(10 CFR 2.206)

COMMONWEALTH EDISON COMPANY
(LaSalle County Generating Station,
Units 1 and 2)

July 19, 1982

The Director of Nuclear Reactor Regulation denies in part petitions filed under 10 CFR 2.206 by the Illinois Attorney General and the Illinois Friends of the Earth regarding deficiencies in construction of LaSalle Unit 1. Remaining matters concerning LaSalle Unit 2 are under investigation.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

Attorney General Tyrone C. Fahner, Esquire, on behalf of the State of Illinois, has filed a petition pursuant to 2.206, dated March 24, 1982, and an amendment thereto, dated May 3, 1982, requesting institution of a show cause proceeding on Commonwealth Edison Company's, La Salle County Station, Units 1 and 2. The petition and amendment set forth allegations of poor construction. In addition, Ms. Bridget Little Rorem, on behalf of the Illinois Friends of the Earth, Essex, Illinois has also filed a petition, dated April 28, 1982, pursuant to 10 CFR 2.206, requesting institution of show cause proceedings on the basis of certain allegations concerning improper construction practices at the La Salle County Station, Units 1 and 2, and further, sought to halt immediately further loading of nuclear fuel at La Salle Unit 1. Ms. Rorem's petition enclosed four affidavits from construction workers setting forth allegations of various improper practices. The NRC staff denied the petitioners' requests for immediate relief by letters dated April 17, 1982, May 19, 1982 and June 2, 1982. In connection with its review of the Attorney General's petition, the NRC staff met with representatives of Commonwealth Edison Company, Sargent and Lundy, and the Attorney General on March 31, 1982, in Bethesda, Maryland. On April 13, 1982, the Attorney General submitted comments on Commonwealth Edison Company's presentation at the March 31st meeting. Commonwealth Edison Company has responded to the Attorney General's petition in submittals dated March 31, May 7, and May 18, 1982. The Attorney General provided additional comments in a letter dated May 26, 1982.

A license was issued on April 17, 1982 to the Commonwealth Edison Company to permit the loading of nuclear fuel assemblies into La Salle Unit 1 and also permitting initial criticality and low power physics testing. The April 17, 1982 license authorized power levels up to and including 5 percent of rated power; however, it requires NRC staff approval prior to going beyond zero power testing. Specifically, the license contained a license condition which stated:

> "The licensee shall complete its assessment of the rebar damaged due to drilling and coring in concrete and the structural adequacy of the off-gas building roof. The results shall be reported to the NRC staff for review and approval, prior to operation following initial criticality and zero power physics testing."

The NRC staff has completed its special inspection into those allegations identified in the above petitions required in order to proceed with licensing of La Salle, Unit 1. The enclosed Region III special inspection report addresses the NRC findings with respect to these allegations as expanded following interviews held with allegers. As indicated in the report, we have grouped the allegations as expanded into three categories:

(1) Category 1 — those allegations requiring satisfactory resolution in order to proceed with the licensing process of La Salle Unit 1;

(2) Category 2 — those allegations that were judged to require a follow-up on a longer time frame which relate to only La Salle Unit 2, personnel concerns, and activities not having immediate safety impact; and

(3) Category 3 — those allegations which range from the too general and unsubstantiated to pursue to those which are subject to regulatory jurisdiction of other agencies, or for which no further action is required by the NRC staff.

As indicated by the report, there were 20 Category 1 allegations of which some were not able to be substantiated by the NRC investigation. For several others, the factual allegations were correct; however, these conditions were found to be acceptable when the entire system of controls was examined. One allegation relating to improper site security matters resulted in finding violations of the licensee's security requirements. When these were brought to the licensee's attention, prompt corrective actions were taken. One allegation of falsification of torque wrench calibration records by a site contractor was substantiated. In a related area, although separate in its cause, a few loose bolts were found on some valves. To provide greater assurance of the adequacy of the bolt tightness, the license of La Salle Unit 1 is being amended to include a license condition requiring that prior to January 15, 1983, the licensee check the torque on all non-pressure boundary bolts (bolts whose failure will affect the operability of the valve) on each safety-related valve located outside the containment. For non-pressure boundary bolts on safety-related valves located inside containment, a similar program was successfully completed by the licensee prior to the conclusion of this inspection period. For the remainder of the safety-related valve bolting, namely those at the reactor coolant pressure boundary, such a check is not being required on the basis that this bolting has been functionally checked during a preoperational hydro test on the reactor coolant boundary.

The items included in Category 2 concerned matters regarding La Salle Unit 2 and other matters requiring further NRC attention. These matters arose primarily out of allegations contained in the affidavits submitted to the NRC and in statements made by persons interviewed by the NRC staff in the course of investigating the allegations. The allegations concern installation activities, a fire, and the condition of the basemat at La Salle Unit 2. The NRC staff will consider these matters further through review of prior inspection reports, additional inspections, and interviews of plant personnel. On the basis of this additional review, the NRC staff intends to issue an additional decision prior to taking licensing actions on La Salle Unit 2.

Other Category 2 items included allegations in the affidavits of installation of damaged equipment, communication problems with representatives of the architect-engineer and poor attitude on the part of management and supervisory personnel. In addition, further assurance that this problem does not exist will be obtained during pre-operational testing, since testing should reveal any problems attributable to damaged or defective equipment. The NRC staff will perform follow-up investigation of allegations directed toward Commonwealth Edison's management and the architect-engineer. On the basis of our review of the allegations, no immediate and substantial safety issue has been identified that would warrant enforcement action or further restrictions of authorized power level.

The affidavits contain some general allegations of inadequate NRC inspection coverage and improper inspector conduct toward plant workers. In the absence of a demonstrable link to specific safety problems or licensee misconduct, improper conduct or inadequate inspections by NRC inspectors would not warrant initiation of show cause proceedings against the licensee to rectify what would be essentially an internal Commission problem. The NRC staff has thoroughly reviewed and pursued the allegations in the petitions and the affidavits and has not found to date a substantial safety hazard warranting initiation of show cause proceedings.

The NRC staff has included in Category 3 allegations derived from the affidavits and additional statements made by persons interviewed by the NRC for which insufficient information could be developed to warrant further NRC action or for which NRC would not take action. Allegations in the affidavits that piping was improperly installed and that equipment was not installed in accordance with blueprints could not be addressed owing to the lack of specific information that could be developed on the basis of pursuing the allegations with the allegers. During the course of the NRC's investigation of the matters raised in the petitions and affidavits, a general allegation was made that drug and alcohol abuse had occurred at the site, but the alleger was unable to provide any specific information. In view of the lack of specific information and in view of the results of the remainder of the NRC staff's investigation of the allegations, no further action is contemplated and no basis for enforcement action exists on the basis of the foregoing allegations at this time.

Allegations were made by the affiants and during further interviews that the circulating water pipe was defective, a bulge existed in the concrete wall of the condenser pit, and there were loose bolts on beams in the Unit 2 turbine buildings. No further NRC action is planned with respect to these allegations because the allegations do not concern safety-related structures and equipment. These matters have been identified to Commonwealth Edison Company for its action as appropriate. Similarly, no further action is contemplated by the NRC with respect to alleged "gross waste" and cost increases that have no apparent bearing on the NRC's health and safety responsibilities. The allegations concerning poor working conditions and inadequate worker safety have been referred to appropriate governmental authorities with jurisdiction over occupational health and safety matters. It should be noted that neither the Attorney General nor Bridget Little Rorem rely specifically in their petitions on the foregoing aspects of the affidavits as a basis for initiating show cause proceedings and halting further licensing of the La Salle facilities.

For the reasons set forth in this decision and in my interim responses to the petitioners, the requests of the Attorney General and Bridget Little Rorem for initiation of show cause proceedings have been *denied* with respect to La Salle Unit 1.

In view of the above, I have concluded that for La Salle Unit 1 the public health and safety is not jeopardized, and does not warrant issuance of an order to show cause. However, for La Salle Unit 2, further investigations will be performed with respect to those outstanding allegations pertaining only to La Salle Unit 2, and the NRC staff will continue to review these matters and issue a further decision prior to taking licensing actions on Unit 2. As provided in 10 CFR 2.206(c), a copy of this decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c).

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 19th day of July, 1982.

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Vol. 16, No. 4
Pages 1219 - 1488

ORIGINAL

NUCLEAR REGULATORY COMMISSION ISSUANCES

October 1982

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NUCLEAR REGULATORY COMMISSION ISSUANCES

October 1982

This report includes the issuances received during the specified period from the Commission (CLI), the Atomic Safety and Licensing Appeal Boards (ALAB), the Atomic Safety and Licensing Boards (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions For Rulemaking (DPRM).

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

U.S. NUCLEAR REGULATORY COMMISSION

Prepared by the Division of Technical Information and Document Control,
Office of Administration, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555
(301/492-8925).

I

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B. Paul Cotter, Chairman, Atomic Safety and Licensing Board Panel

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of | **Docket Nos. 50-247**
50-286

CONSOLIDATED EDISON COMPANY OF NEW YORK
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF NEW YORK
(Indian Point, Unit 3)

October 1, 1982

The Commission requests the newly reconstituted Licensing Board to estimate when it can provide its recommendations concerning certain long-term safety issues relating to Units 2 and 3 of this facility called for in CLI-81-23, 14 NRC 610 (1981).

ORDER

The Commission requests the Atomic Safety and Licensing Board reconstituted by its Order CLI-82-24 of September 15, 1982, to give its estimate of when the

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recommendations called for by Order CLI-81-23 of September 18, 1981, can be provided.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 1st day of October, 1982.

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Cite as 16 NRC 1221 (1982) CLI-82-29

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket Nos. 50-397**
50-460

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
(WPPSS Nuclear Project Nos. 1 & 2) **October 8, 1982**

In considering petitions for hearings on the licensee's requests for extension of the construction completion dates specified in the construction permits for two units of this facility, the Commission interprets Section 185 of the Atomic Energy Act and 10 CFR §50.55 as limiting contentions that can be raised in a construction permit extension proceeding to those that pertain to the licensee's asserted reasons for "good cause" for the delay or to other reasons showing that the licensee does not have such "good cause." In line with this interpretation, the Commission, *inter alia*, dismisses all but a single joint contention raised in the pending petitions as outside the scope of the proceeding and refers the remainder of the petitions to the Chairman of the Atomic Safety and Licensing Board Panel for designation of a Board to determine whether the other requirements for a hearing outlined in 10 CFR §2.714 have been met, and, if so, to conduct an appropriate proceeding under 10 CFR Part 2, Subpart G, and 10 CFR Part 50.

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE (GOOD CAUSE)

The focus of any construction permit extension proceeding is to be whether good cause exists for the requested extension. Likewise, this "good cause" requirement

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is the focal point of any consideration of the scope of the contentions that can be admitted at such a proceeding.

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE (SCOPE OF PROCEEDING)

A construction permit extension proceeding is not for the purpose of engaging in an unbridled inquiry into the safety and environmental aspects of reactor construction and operation. A contention cannot be litigated in a construction permit extension proceeding when there is a pending operating license proceeding in which the issue can be raised. Prior to the operating license proceeding, a contention having nothing whatsoever to do with the causes of delay or the permit holder's justifications for an extension cannot be litigated in a construction permit proceeding. *Indiana and Michigan Electric Company* (Donald C. Cook Nuclear Plant, Units 1 and 2), ALAB-129, 6 AEC 414 (1973); *Northern Indiana Public Service Company* (Bailly Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980).

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE (SHOW-CAUSE PROCEEDING)

Where a request for a construction permit extension has been filed and the operating license proceeding for the plant is yet to be held, persons who wish to raise health, safety or environmental concerns may, pursuant to 10 CFR §2.206, petition the Director of Nuclear Reactor Regulation to institute a show-cause proceeding under 10 CFR §2.202. The request must specify the action sought and set forth the facts that constitute the basis for the request.

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE (SCOPE OF PROCEEDING)

The scope of a construction permit extension proceeding under Section 185 of the Atomic Energy Act and 10 CFR §50.55 is limited to direct challenges that seek to prove that, on balance, delay was caused by circumstances that do not constitute "good cause."

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE (SHOW-CAUSE PROCEEDING)

The avenue afforded for the expression of health, safety, and environmental concerns in any pending operating license proceeding, or in the absence of such a

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proceeding, in a petition under 10 CFR §2.202 would be exclusive despite the pendency of a construction permit extension request.

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE (GOOD CAUSE)

The determination of the sufficiency of a construction permit holder's reasons for delay will be influenced by whether they were the sole important reasons for the delay or whether, instead, the delay was in actuality due in significant part to other causes such as applicant's dilatory conduct of the construction work. *Cook, supra*, 6 AEC at 417.

ORDER

Pending before the Commission are two petitions for a hearing filed by intervenor Coalition for Safe Power (CSP). In both instances, CSP seeks to challenge separately filed requests of the Washington Public Power Supply System (WPPSS) for the extension of the construction completion dates for two of the units being constructed at its site in Benton County, Washington. In its hearing petitions, to which we give consolidated consideration under 10 CFR §2.716, CSP seeks to have admitted for determination, over the objections of the NRC staff and WPPSS, a broad range of issues concerning the construction and operation of the two units by WPPSS. While the usual Commission procedure in such instances would be to refer these petitions to an Atomic Safety and Licensing Board for determination, because of the uncertainty the Commission perceives exists as to the proper scope of a construction permit extension proceeding, it has determined to take up this matter in the first instance in order to clarify for all concerned the nature of the issues that can be asserted in challenging a permit holder's extension request.

On March 19, 1973, WPPSS was issued a permit for the construction of Washington Nuclear Project No. 2 (WNP-2), the completion date for which was extended to December 1, 1981, in August of 1978. A permit for the construction of Washington Nuclear Project No. 1 (WNP-1) was issued on December 23, 1975, and set the latest date for completion of construction as January 1, 1982. An application for an operating license for WNP-1 has been docketed and CSP has sought intervention in that proceeding. A notice of opportunity for hearing with regard to WNP-2 was issued in July 1978 in response to a WPPSS OL application. Intervention was sought, but the Licensing Board concluded that none of the intervenors met the interest requirements of 10 CFR §2.714 and denied the requests to intervene. *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), LBP-79-7, 9 NRC 330 (1979). No appeal was taken of that

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decision and, accordingly, the application for an operating license for WNP-2 presently is uncontested.

On July 21, 1981, WPPSS filed an application for an extension of its construction permit completion date for WNP-1 to June 1, 1986. Subsequently, on September 4, 1981, WPPSS filed an additional application requesting an extension of its construction permit completion date for WNP-2 to February 1, 1984. In both applications WPPSS indicated that under 10 CFR §50.55(b) "good cause" existed for an extension because construction has been delayed due to the following factors:

1. Changes in the scope of the project including increases in the amount of material and engineering required as a result of regulatory actions, in particular those subsequent to the Three Mile Island accident.
2. Construction delays and lower than estimated productivity resulted in delays in installation of material and equipment and delays in completion of systems necessitating rescheduling of preoperational testing.
3. Strikes by portions of the construction work force.
4. Changes in plant design.
5. Delays in delivery of equipment and materials.

The extension request with regard to WNP-1 is still pending before the NRC staff. An order granting the WPPSS request for an extension with regard to WNP-2 was published in the *Federal Register* on February 2, 1982. 47 *Fed. Reg.* 4780. In that order, the Director of the Division of Licensing, Office of Nuclear Reactor Regulation, found that the requested extension involved no significant hazards consideration so that the extension could be issued without prior notice, that good cause was shown for the construction delays, that the requested extension was for a reasonable period, that the licensing action would not result in any significant environmental impact, and that pursuant to 10 CFR §51.5(d)(4) no environmental impact statement, negative declaration, or environmental impact appraisal was required to be prepared.

CSP filed its petitions for a hearing on the permit extension requests for WNP-2 and WNP-1 on February 23 and March 18, 1982, respectively. In those petitions, CSP seeks to litigate identical issues as to both WNP-1 and WNP-2. These joint contentions include:

1. WPPSS lacks the technical ability to complete and/or operate the facilities in a safe manner.
2. Delays in construction time have been under full control of WPPSS management.
3. WPPSS lacks the management ability to complete and/or operate the facility in a safe manner.
4. WPPSS lacks the financial ability to complete and/or operate the facility in a safe manner.

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In addition, as to WNP-1, CSP desires to challenge the extension request on the grounds that:

1. WPPSS was granted a construction permit on the basis of its ability to construct a safe nuclear plant and has, thus far, failed to do so.
2. The current financial status of WPPSS is threatened by previously unforeseen circumstances.
3. Newly instituted work incentive programs may affect continued construction and potential operation of the project.

Finally, as to WNP-2 alone, CSP alleges:

1. Delays of twelve months due to WPPSS violations of NRC regulations do not constitute good cause. WPPSS was granted a construction permit on the basis of its ability to build a safe plant.
2. The NRC staff ignored WPPSS construction history in concluding with regard to its "no significant hazards consideration" finding that "neither the probability nor the consequence of postulated accidents previously considered will be increased nor will any safety margins associated with this facility be decreased."
3. The NRC staff ignored the financial condition of WPPSS in concluding with regard to its "no significant hazards consideration" finding that "neither the probability nor the consequence of postulated accidents previously considered will be increased nor will any safety margins associated with this facility be decreased."

Both WPPSS and the NRC staff have sought dismissal of the CSP hearing requests on several grounds, including the assertion that the various contentions either fall outside the scope of the issues litigable in a construction permit extension proceeding or are too vague to be litigated. It is this issue that has prompted the Commission to consider the CSP petitions in the first instance.

Under section 185 of the Atomic Energy Act, 42 U.S.C. §2235, a construction permit as issued "shall state the earliest and latest dates for the completion of construction. . . ." In addition, that provision indicates that "[u]nless the construction . . . of the facility is completed by the completion date, the construction permit shall expire, and all rights thereunder shall be forfeited, unless upon good cause shown, the Commission extends the completion date." The Commission's regulation governing construction completion date extensions, 10 CFR §50.55(b), provides that "upon good cause shown the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date." From these two provisions it is apparent that the focus of any construction permit extension proceeding is to be

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whether "good cause" exists for the requested extension. Likewise, this requirement of "good cause" is the focal point of any consideration of the scope of the contentions that can be admitted at such a proceeding.

In determining the proper bounds for admissible contentions in a construction permit extension proceeding we do not necessarily mark upon a clean slate. Previously, the Atomic Safety and Licensing Appeal Board has faced the issue of what is the scope of such a proceeding. In the first instance, *Indiana and Michigan Electric Company* (Donald C. Cook Nuclear Plant, Units 1 and 2), ALAB-129, 6 AEC 414 (1973), Appeal Board review was sought of an Atomic Safety and Licensing Board decision dismissing intervenor contentions as outside the scope of a construction permit extension proceeding. Despite the pendency of an environmental review-operating license proceeding to which the same intervenors were a party, they had sought to have admitted to the construction permit extension proceeding contentions relating to the health and safety and environmental impacts of the changes in plant design that the permittee put forward as part of its "good cause" for the extension. The Appeal Board, finding the legislative history of Section 185 and the language of 10 CFR §50.55(b) inconclusive in ascertaining any intent about the scope of an extension proceeding, stated that such a determination should be based on "common sense" and the "totality of the circumstances" so as to ascertain "whether the present consideration of any such issue or issues is necessary in order to protect the interest of intervenors or the public interest." 6 AEC at 420. More specifically, the Appeal Board indicated that it was concerned with "whether the reasons assigned for the extension give rise to health and safety or environmental issues which cannot appropriately abide the event of the environmental review-facility operating license hearing." *Id*. Reviewing the proposed contentions, the Appeal Board found the intervenors' health and safety concerns relating to plant design clearly could abide the operating license proceeding in which they could be given full consideration by the Licensing Board. Further, as to the concerns over the environmental impact of such design changes, the Appeal Board noted that the intervenors had, in effect, waived the introduction of such an issue by not responding to an agency offer to contest a staff determination that it would not suspend the Cook facility's construction permit pending full environmental review in conjunction with the operating license proceeding. Accordingly, intervenors' contentions not being admissible in the proceeding and they having made no challenge to the sufficiency of the permittee's asserted reasons in support of the extension, the Appeal Board affirmed the Licensing Board's determination to dismiss the intervenors' contentions and its finding that good cause existed for the extension.

Some seven years later in *Northern Indiana Public Service Company* (Bailly Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980), the Appeal Board was again confronted with a Licensing Board's denial of an intervenor request to convene a proceeding to consider whether a construction permit exten-

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sion should be granted. In contrast to the *Cook* case, however, in *Bailly* the facility in question was less than one percent complete, six and one-half years after issuance of the construction permit. Intervenors sought the admission of contentions relating to the suitability of the site, which were not related to any of the permittee's justifications for the extension. The Appeal Board, noting the *Cook* opinion's general admonition that scope determinations should be based on a "common sense" approach that considers the "totality of the circumstances," indicated that, despite the lack of any direct ties between the intervenors' contentions and the permittee's reasons why construction was delayed, in the absence of any alternative forum it might be willing to allow intervenors to air their site suitability concerns presently, before a substantial additional monetary investment was made. Having so stated, however, the *Bailly* Board found that 10 CFR §2.206 did afford that alternative. Intervenors questioned whether the opportunity given by section 2.206 to request the NRC staff to institute a show-cause proceeding under 10 CFR §2.202 to suspend the permit was sufficient; however, the Board indicated it was unwilling to assume that the staff would not fulfill its obligation to give "careful and responsible" evaluation to intervenors' concerns or that the Commission, in exercising its *sua sponte* review authority over a staff decision not to take any action, would not fulfill its obligation to fully examine the grounds assigned by the staff for refusing to institute a section 2.202 proceeding. The Appeal Board declared that it was not willing to denote section 2.206 as an exclusive remedy, but because the contentions in the proceeding before it had "nothing whatever to do with the need for the permit extension," the Board concluded it was appropriate to leave intervenors' site suitability concerns for consideration in the context of section 2.206 and thus affirmed the Licensing Board's decision denying the petitions to intervene.[1]

In both *Cook* and *Bailly*, the Appeal Board noted that the purpose of a construction permit extension proceeding is not to engage in an unbridled inquiry into the safety and environmental aspects of reactor construction and operation (6 AEC at 420; 12 NRC at 573), an observation in which we wholeheartedly concur. Moreover, if properly read, the *Cook* and *Bailly* decisions stand for two principles that are totally consistent with that proposition: (1) A contention cannot be litigated in a construction permit extension proceeding when an operating license proceeding is pending in which the issue can be raised; and (2) prior to the operating license proceeding, a contention having nothing whatsoever to do with the causes of delay or the permit holder's justifications for an extension cannot be litigated in a construction permit proceeding. As such, the result in both those

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[1] The Licensing Board had dismissed the intervenors' petitions on the ground that the Commission had taken upon itself the task of considering the site suitability of all reactors under construction in areas of high population density. The Appeal Board expressed no opinion as to the propriety of this determination. 12 NRC at 573 n.18.

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cases — dismissal of the contentions in question as outside the scope of the extension proceeding — was correct.

Relying on the Appeal Board's characterization of the test for admissibility of contentions under section 185 and 10 CFR §50.55 as requiring a consideration of the "totality of the circumstances," intervenors have continued to seek to have contentions on a wide range of subjects admitted at extension proceedings. The cited Appeal Board decisions were not reversed or otherwise modified by the Commission and they therefore represent, at this juncture, controlling Commission precedent. However, because the number and type of contentions that CSP seeks to have admitted here highlights possible views about the scope of an extension proceeding, we take this opportunity to reexamine the scope of construction permit extension proceedings and provide further guidance.

Although the congressional intent behind section 185 may be somewhat ambiguous, we discern no intent on the part of Congress to require the periodic relitigation of health, safety, or environmental questions in agency adjudications between the time a construction permit is granted and the time the facility is authorized to operate. Rather, interested persons have been legislatively afforded a particular opportunity to raise such issues in the context of a proceeding in which the agency determines whether an operating license will be granted. 42 U.S.C. §2239(a). Consistency with the congressionally mandated two-step licensing process suggests a construction of section 185 that limits the scope of litigable issues with regard to the extension of a construction permit.

In line with this interpretation of section 185 is the language of the Commission's regulation implementing section 185. 10 CFR §50.55(b) speaks in terms of Commission consideration of "developmental problems attributable to the experimental nature of the facility" and "acts beyond the control of the permit holder." Its thrust is clearly that the Commission's inquiry will be into reasons that have contributed to the delay in construction and whether those reasons constitute "good cause" for the extension. This same limitation should apply if any interested person seeks to challenge the request for an extension.

This, of course, does not mean that those who wish to raise health, safety, or environmental concerns before the agency have no remedy prior to the operating license proceeding. This opportunity is afforded to all persons under 10 CFR §2.206, which allows any person to seek the institution of a show-cause proceeding under 10 CFR §2.202. The invocation of this procedure under section 2.206, which does not depend on the fortuity of a delay in the completion of a plant that triggers a permit extension request, requires that the NRC staff give serious consideration to requests for regulatory action concerning a licensed facility so long as the request specifies the action sought and sets forth the facts that constitute the basis of the request. The staff must analyze the technical, legal, and factual basis for the relief requested and respond either by undertaking some regulatory activity or, if it believes no show-cause proceeding or other action is necessary, by

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advising the requestor in writing with a statement of reasons explaining that determination. Further, the Commission reviews each of these decisions *sua sponte* to insure that the staff's decision is not an abuse of discretion. Past practice clearly indicates that, as the Appeal Board in *Bailly* concluded, the agency has "faithfully discharged" its responsibility to give full consideration to petitions seeking relief under section 2.206. *See, e.g., Virginia Electric Power Company* (Surry Nuclear Power Station, Units 1 and 2), CLI-80-4, 11 NRC 405 (1980) (granted by the Commission requiring EIS on repair of steam generators at Surry 1); *Dairyland Power Cooperative* (LaCrosse Boiling Water Reactor), DD-80-9, 11 NRC 392 (1980) (granted in part by the staff by issuing order to show cause to resolve issue of whether certain measures were required to preclude liquefaction at the site); *Consolidated Edison Company of New York, Inc.* (Indian Point Units 1 and 2) *and Power Authority of the State of New York* (Indian Point Unit 3), DD-80-5, 11 NRC 351 (1980) (granted by the staff with respect to Unit 1 by issuing order to show cause why operating license should not be revoked and why decommissioning plan should not be submitted).

We believe that the most "common sense" approach to the interpretation of section 185 and 10 CFR §50.55 is that the scope of a construction permit extension proceeding is limited to direct challenges to the permit holder's asserted reasons that show "good cause" justification for the delay. The avenue afforded for the expression of health, safety, and environmental concerns in any pending operating license proceeding, or in the absence of such a proceeding, in a petition under 10 CFR §2.206 would be exclusive despite the pendency of a construction permit extension request.[2] This does not mean, however, that no challenge can be made to an application for an extension of a construction permit completion date. In seeking an extension, a permit holder must put forth reasons, founded in fact, that explain why the delay occurred and those reasons must, as a matter of law, be sufficient to sustain a finding of good cause. Certainly, the factual basis for the reasons for delay asserted are always open to question in that the permit holder cannot invent reasons that did not exist. Moreover, the permit holder cannot misrepresent those reasons upon which it seeks to rely, for, as the Appeal Board in *Cook* noted, any determination of the sufficiency of a permit holder's reasons for delay "would be influenced by whether they were the sole important reasons for the delay or whether, instead, the delay was in actuality due in significant part to other causes (which perhaps might have indicated that the applicants have been dilatory in the conduct of the construction work and that this factor was the principal explanation for the need for an extension of the completion deadlines)." 6 AEC at 417. An intervenor is thus always free to challenge a request for a permit extension by seeking to prove that, on balance, delay was caused by circumstances that do not constitute "good cause."[3]

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[2] In *Bailly*, the Appeal Board interpreted the *Cook* decision as indicating that section 2.206 was not an exclusive remedy because that opinion did not mention the availability of such a procedure. In fact, there was no need for the Appeal Board in *Cook* to discuss the availability of any show-cause procedure because the Board found that the opportunity afforded for the litigation of the design contention in the pending environmental review-operating license proceeding in which the intervenors were parties was sufficient to protect their interests.

Turning to a consideration of those contentions intervenor CSP wishes to introduce in this instance, we find most are outside the scope of the proceeding. Of the joint contentions it seeks to litigate as to both WNP-1 and WNP-2, see p. 1224 *supra*, numbers 1, 3, and 4 are inappropriate because they neither challenge the WPPSS reasons for delay nor seek to show that other reasons, not constituting good cause, are the principal basis for the delay. So too with CSP contentions 1, 2, and 3 relating to WNP-1. Accordingly, all these contentions must be dismissed as improper.

CSP contentions 2 and 3 relating to WNP-2, see p. 1225 *supra*, are also subject to dismissal. These contentions are relevant not to its challenge to the "good cause" for extension of the construction completion date but rather are a contest to the staff's finding of "no significant hazards consideration" in issuing the permit extension without prior notice under section 189a of the Atomic Energy Act, 42 U.S.C. §2239(a). To whatever extent such a determination may be litigable as to other license revisions, in this context the CSP challenge has no practical import. A finding that the staff was incorrect in its decision regarding this procedural matter would have no effect on the continuing substantive validity of the WPPSS construction permit pending any final agency action on the merits of the extension request. 10 CFR §2.109; *see* 5 U.S.C. §558(c). Accordingly, we find no basis for requiring that these contentions be considered by a Licensing Board.

Likewise inadmissible, although for a somewhat different reason, is CSP's first contention relating to WNP-2, by which it asserts that delays were due to WPPSS violations of NRC regulations. It might be argued that this contention should be admitted because it seeks to establish that a reason other than those given by the permit holder is a principal cause of delay and that such a reason does not constitute "good cause"; upon closer examination, however, we believe the admission of such a contention in a construction permit extension proceeding on that basis would be contrary to the overall intent of the Atomic Energy Act and the Commission's regulations. If a permit holder were to construct portions of a facility in violation of NRC regulations, when those violations are detected and corrections ordered or voluntarily undertaken, there is likely to be some delay in the construction caused by the revisions. Nonetheless, such delay, as with delay caused by design changes, must give "good cause" for an extension. To consider it otherwise

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[3] Because such issues are not before us, we express no opinion about the permissible scope for contentions that challenge a staff finding concerning the agency's National Environmental Policy Act responsibilities with regard to an extension of a construction completion date or that challenge any additional requested revisions of a construction permit made in conjunction with an application for an extension.

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could discourage permit holders from disclosing and correcting improper construction for fear that corrections would cause delays that would result in a refusal to extend a construction permit, a result obviously inconsistent with the Commission's efforts to ensure the protection of the public health and safety.[4] This contention thus is not litigable.

This leaves only joint contention 2 supporting CSP's hearing request, which charges that "delays in construction have been under the full control of the WPPSS management." To the extent CSP is seeking to show that WPPSS was both responsible for the delays and that the delays were dilatory and thus without "good cause" this contention, if properly particularized and supported, would be litigable. *See* 10 CFR §2.714.

Accordingly, in line with the dictates of this order, the hearing petitions filed by CSP are referred to the Atomic Safety and Licensing Board Panel, the Chairman of which should designate a Board to determine whether the other hearing requirements of the Commission's regulations in 10 CFR §2.714 have been met and, if so, to conduct an appropriate proceeding under 10 CFR Part 2, Subpart G, and 10 CFR Part 50. However, the pendency of any Board proceedings will not affect the NRC staff's authority, upon a finding of "no significant hazards consideration," to issue an immediately effective amendment relevant to the WPPSS construction completion extension request for WNP-1.[5] *Commonwealth Edison Company* (Dresden Nuclear Power Station, Unit 1), CLI-81-25, 14 NRC 616, 622-23 (1981). In addition, pursuant to 10 CFR §2.785, the Commission's review functions with respect to any ensuing proceedings on the extension of the construction completion date shall be exercised by an Atomic Safety and Licensing Appeal Board.

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[4] That is not to say that violations of NRC regulations and the issues of health, safety, and management competence they may raise cannot be brought forth. Indeed, the expression of such concerns may be proper by way of a petition under section 2.206 or when the applicant seeks an operating license.

[5] In its response to the CSP hearing petition, the NRC staff stated that, based on its evaluation to date of the WPPSS request, it had determined that the extension does not involve a significant hazards consideration. The staff further indicated that it has not yet completed its evaluation of whether, under 10 CFR §50.55(b), there is good cause for the delay in construction and whether the requested extension period is reasonable.

Commissioners Gilinsky and Ahearne dissent from this Order. Commissioner Gilinsky's separate views are attached.

It is so ORDERED.

For the Commission[6]

Samuel J. Chilk
Secretary of the Commission

Dated at Washington, D.C.,
this 8th day of October, 1982.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

Today's eleven-page decision is yet another example of this Commission's tendency to immerse itself in the procedural trivia of a case. One of our Licensing Boards, to whom this request for a hearing should have been referred, could have applied our regulations competently to the facts of this case. The Commission's only contribution has been to reject the Appeal Board's observation that "common sense" and the "totality of the circumstances" should be considered when deciding upon the scope of a hearing on the extension of a construction permit.

At the same time, there is a safety aspect to this case which the Commission might have looked into, and which suggests that our regulations, and the Atomic Energy Act, need some adjustment. Section 185 of the Atomic Energy Act provides that, if construction of a plant is not completed by the date specified in the construction permit, that permit "shall expire . . . unless upon good cause shown" the Commission decides to extend the completion date. Our regulations provide that, in making this decision, we will consider ". . . among other things, developmental problems attributable to the experimental nature of the facility or fire,

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[6] Commissioner Roberts was not present when this Order was approved. Had Commissioner Roberts been present at the meeting he would have voted with the majority. To enable the Commission to proceed with this case without delay, Commissioner Ahearne, who was a member of the minority on the question up for decision, did not participate in the formal vote.

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flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder" as grounds for an extension.[1]

When these provisions were adopted in the 1950s, a developmentally inclined Commission wanted to have a means of encouraging licensees, some of which were subsidized, to meet construction deadlines. The relevance of requiring licensees to show "good cause" (*i.e.*, events beyond their control) to the NRC's present regulatory responsibilities is far less clear. Indeed, it seems that this requirement continues to exist only because no one has thought about its purpose since its adoption.

If there are to be hearings on construction permit extensions, such hearings should deal with whether improvements in safety since the issuance of the construction permit require that the design of the plant be modified and with any issues that can more easily be resolved prior to the completion of construction. For example, in the *Bailly* proceeding, it would have made more sense to decide the site suitability and short pilings issues prior to the start of construction than to postpone these issues to the operating license hearing.

It is ironic that this Commission, which professes interest in devising a more rational licensing process, should eliminate any possibility of construction permit extension hearings serving a useful purpose and rule that such hearings must deal only with lawyers' arguments about the responsibility for delays and the existence of good, as opposed to bad, cause. Such issues seem to lend themselves naturally to obstructionism and delay. The Appeal Board was at least capable of imagining that such hearings could play a useful role. Instead of issuing today's opinion, the Commission should have directed the General Counsel to prepare a proposed amendment to the Atomic Energy Act providing for sensible hearings on construction permit extensions.

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[1] 10 CFR 50.55(b).

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-275-OL
50-323-OL
(Security Proceeding)

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power
Plant, Units 1 and 2)

October 8, 1982

The Commission pursuant to 10 CFR 2.913 directs that all classified National Security Information be expunged from the Appeal Board's security plan decision (ALAB-653) in this proceeding and the record underlying that decision.

RULES OF PRACTICE: CLASSIFIED INFORMATION (EXPUNCTION FROM PROCEEDING)

10 CFR 2.913 requires that where Restricted Data or other National Security Information has been introduced into a proceeding, such classified information shall be expunged from the record at the close of the reception of evidence "where such expunction would not prejudice the interests of a party or the public interest."

ORDER

In its July 29, 1982 Order in this proceeding the Commission noted that two sentences in ALAB-653 contain classified national security information and that it

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was "considering expunging the classified material from ALAB-653 and the underlying record pursuant to 10 CFR 2.913." The Commission also provided the parties an opportunity to "comment on whether expunction of the classified material would prejudice them." No party has commented.

10 CFR 2.913 requires that National Security Information be expunged from the record at the close of the reception of evidence "where such expunction would not prejudice the interests of a party or the public interest." The Commission has determined that this classified information is not essential to the Appeal Board's opinion and that its expunction would not prejudice any party or the public. The Commission therefore directs that all classified material be expunged from ALAB-653 and the underlying record.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 8th day of October, 1982.

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*Commissioner Roberts was not present when this Order was affirmed, but had previously indicated his approval of this Order. Had Commissioner Roberts been present, he would have affirmed his prior vote.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-289-SP (Restart)**

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear Station, Unit No. 1)

October 14, 1982

The Commission, pursuant to its immediate effectiveness review of the Licensing Board's July 27, 1982 Partial Initial Decision in this proceeding, (1) determines that the Licensing Board lacked jurisdiction to impose a fine on licensee for failures with respect to the licensee's management of its examination process for reactor operator licenses and refers the matter to the Director, Office of Inspection and Enforcement, for a recommendation on whether a civil penalty proceeding should be instituted against licensee; and (2) adopts a Board recommendation that the NRC investigate a possible material false statement by licensee concerning the test score of an individual certified to the NRC for an operator's license renewal. The Commission also directs that the Appeal Board which is reviewing the Licensing Board's decision is not to consider either of these matters in its review.

CIVIL PENALTIES: ASSESSMENT (AUTHORITY)

The NRC's regulations do not contain any provision conferring jurisdiction on licensing boards to impose fines *sua sponte*.

CIVIL PENALTIES: ASSESSMENT (AUTHORITY)

The powers granted to a licensing board by 10 CFR 2.718 "to conduct a fair and impartial hearing according to law, to take appropriate action to avoid delay, and to maintain order" do not include the power to impose a civil penalty.

CIVIL PENALTIES: ASSESSMENT (AUTHORITY)

10 CFR 2.205(a) confers the authority to institute a civil penalty proceeding only upon the NRC's Director of Nuclear Reactor Regulation, the Director of Nuclear Material Safety and Safeguards, and the Director, Office of Inspection and Enforcement. A licensing board becomes involved in a civil penalty proceeding only if the person charged with a violation requests a hearing. (*See* 10 CFR 2.205(f)).

CIVIL PENALTIES: ASSESSMENT (PROCEDURE)

Under Section 234 of the Atomic Energy Act, 42 U.S.C. 2282(b), and 10 CFR 2.205 of the Commission's regulations, a person subject to imposition of a civil penalty must first be given written notice of (1) the specific statutory, regulatory or license violations, (2) the date, facts, and nature of the act or omission with which the person is charged, and (3) the proposed penalty. The person subject to the fine must then be given an opportunity to show in writing why the penalty should not be imposed.

MEMORANDUM AND ORDER

The Commission in conducting its immediate effectiveness review of the Licensing Board's July 27, 1982 Partial Initial Decision (PID) (LBP-82-56, 16 NRC 281) in this proceeding has decided that two items require immediate clarification: (1) the Board's imposition of a $100,000 fine on Licensee; and (2) the Board's recommendation that the NRC conduct an investigation into a possible material false statement by Licensee. After considering these matters the Commission directs (1) that the Office of Inspection and Enforcement determine whether a civil penalty proceeding should be instituted against Licensee for acts uncovered in this proceeding, and (2) that the Office of Investigations investigate the alleged material false statement. Because the Commission believes these matters should be resolved outside of the context of this adjudication, the Atomic Safety and Licensing Appeal Board which is reviewing the July 27, 1982 PID is not to consider either of these matters in its review.

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I. THE MONETARY PENALTY

The Licensing Board imposed a monetary penalty on Licensee

> because its management negligently failed to safeguard the integrity of its examination process, because it failed to instill an attitude of respect for the company and NRC examinations process, because it failed to assure the quality of training instruction and because of negligence in the procedures for certification of candidates for the NRC licensing examinations.

PID at 382. The Board stated that "[t]he amount . . . is not the result of mathematical calculation nor was it arrived at with the Commission's guidelines on Civil Penalties. This is a remedial, symbolic penalty intended to attract the attention of all interested parties." *Id.* at 382. The Board found that this was "a long-term remedial action . . . [that] need not be imposed before restart." *Id.* The Board recognized that there could be a dispute over its jurisdiction to impose a penalty and asserted that if its "jurisdiction should be found wanting, this action should be regarded as the Board's recommendation." *Id.*

The Commission has determined that the Board did not have jurisdiction to impose this penalty. There is no indication in the Commission's August 9, 1979 Order which established the Restart Licensing Board that the Commission had given the Board authority to impose a fine. CLI-79-8, 10 NRC 141. Nor do the NRC's regulations contain any provision conferring jurisdiction on licensing boards to impose fines *sua sponte*. The Commission does not interpret the delegation of power to the Board to "[t]ake any other action consistent with the Act, this chapter, and sections 551-558 of title 5 of the United States Code," 10 CFR 2.718(m), as conferring such authority. The powers granted by that section are those necessary "to conduct a fair and impartial hearing according to law, to take appropriate action to avoid delay, and to maintain order." 10 CFR 2.718. Imposition of a civil penalty under the circumstances here does not fall within the intent of 10 CFR 2.718.

Similarly, 10 CFR 2.205(a) confers the authority to institute a civil penalty proceeding only upon the Director of Nuclear Reactor Regulation, the Director of Nuclear Material Safety and Safeguards, and the Director, Office of Inspection and Enforcement. A licensing board becomes involved only if the person charged with violation requests a hearing. *See* 10 CFR 2.205(f).

Finally, section 234 of the Atomic Energy Act, 42 U.S.C. 2282(b), and the Commission's regulations, 10 CFR 2.205, set forth procedural requirements which must be followed prior to imposition of a civil penalty. A person subject to imposition of a fine must be given written notice of (1) the specific statutory, regulatory or license violations, (2) the date, facts and nature of the act or omission with which he is charged, and (3) the proposed penalty. The person subject to the fine must then be given an opportunity to show in writing why the penalty should not be imposed. None of those steps were followed here. Indeed, the Licensing Board recognized "that the Licensee was not notified that a penalty might be assessed and has had no opportunity to address it." PID at 382.

That part of the Board's opinion imposing a monetary penalty is therefore vacated. With regard to the Board's alternative proposal, that the penalty be treated as a recommendation, the Commission has decided to refer the question to the Director, Office of Inspection and Enforcement, for a recommendation to the Commission on whether a civil penalty proceeding should be instituted. The Board's recommendation can thus be examined under appropriate agency procedures outside of this adjudicatory proceeding. The Director in considering this matter is to rely on the record of this proceeding and other currently available material. If the Director should find that additional investigation is required to reach a decision whether to institute a proceeding, he is to refer this matter to the Office of Investigations. The Commission is not by this referral expressing any viewpoint on the merits of the Board's recommendation.

II. THE ALLEGED MATERIAL FALSE STATEMENT

The Licensing Board also recommended that "[t]he Commission direct the NRC Staff to conduct an investigation into the August 3, 1979 certification of VV to the NRC for operator's license renewal. . . ."[1] PID at 384. The Board had concluded that the TMI Station Manager, with the knowledge and assent of a Met Ed Vice President, "falsely certified to the NRC that VV had attained a score of 89.1% on Section A, Principles of Reactor Theory, when in fact each of them knew that VV had not attained that score." *Id.* at 352.

This incident occurred prior to the cheating which led to the reopening of this proceeding. It also involved a TMI-2 employee. The Board, in discussing the questions of remedy and jurisdiction, noted that this episode had an indirect relevance to its jurisdiction in that it related "to the competence of Licensee's management, Licensee's certification procedures, and Licensee's policies to deter cheating." PID at 353. The Board further noted that its proposed remedies would require continued NRC activity after its jurisdiction passed. The Board therefore approached the matter by making recommendations rather than ordering relief. In this connection the Board set out its views on how the investigation should be conducted.

The Commission agrees with the Licensing Board that there is reasonable cause to inquire further into this matter. The Commission's Office of Investigations has already commenced an investigation. That Office is not bound by the suggestions of the Licensing Board, but rather will use its expertise in conducting this

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[1] By stipulation between the parties some individuals were identified by letter designation to protect their privacy. VV was a TMI-2 Supervisor of Operations. He was removed from his operational job as a result of this incident.

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investigation. The Commission believes that creation of this new Office since the Licensing Board issued its opinion should alleviate the Board's apparent concerns whether Staff could conduct a thorough, objective investigation into this matter.

The Licensing Board separated this incident from the bases for the monetary penalty. The Commission agrees that this investigation should be conducted separately from the inquiry by the Office of Inspection and Enforcement into whether a civil penalty proceeding should be initiated. The Office of Investigations is to provide its findings to the Office of Inspection and Enforcement, who will provide the Commission with a recommendation on whether any further action should be undertaken.

Commissioner Gilinsky dissents from this decision. The separate views of Commissioners Gilinsky and Roberts are attached.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 14th day of October, 1982.

SEPARATE VIEW OF COMMISSIONER ROBERTS

I do not believe that Commission orders ruling on legal questions in adjudicatory proceedings need to be accompanied by separate views responding to every dissenting opinion of every Commissioner in order to be sound and complete. When misleading and inaccurate statements about persons and companies unable to respond effectively to such statements are made in these dissenting opinions, however, I believe that accuracy and fairness require a response. Such is the case here. I would not have written this separate view but for statements made in Commissioner Gilinsky's view. With this end in mind, I will list a few facts the reader should remember when reading Commissioner Gilinsky's view.

The first deals with Commissioner Gilinsky's assertion that the Commission refuses to confront the issue of the competence of GPU to operate TMI Unit 1. It seems that whenever the Commission does not agree with the manner in which

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*Commissioner Roberts was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Roberts been present he would have affirmed his prior vote.

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Commissioner Gilinsky wishes to resolve an issue, the Commission is subjected to the charge that it is not "confronting" the issue. Nothing could be farther from the truth on the question of GPU management competence. As Commissioner Gilinsky doubtless recalls, the issue of management competence was vigorously litigated in an adjudicatory hearing. The Licensing Board's initial decision on this issue alone comprised 205 pages. The Board concluded that GPU had demonstrated the managerial capability and technical resources to operate Unit 1 while maintaining Unit 2 in a safe configuration. When arguments were made alleging that cheating on the part of operators evidenced management incompetence, the NRC investigated the allegations and held an adjudicatory hearing on the issue. Again, the Licensing Board found there was no evidence that GPU's management encouraged or condoned cheating on NRC- or company-administered examinations. Most recently, arguments have been made that the 1979 certification of a reactor operator as qualified to take the NRC examination when portions of a GPU examination taken by that operator were completed by another operator evidence management incompetence. The Commission has directed the Office of Investigations to look into this incident. The above actions hardly comprise the record of a Commission "refusing" to confront the management competence issue.

With regard to the $100,000 fine, the Licensing Board which suggested the fine recognized itself that it might not have the authority to impose a monetary penalty. Not only did the Licensing Board not have the power to monetarily penalize GPU but none of the requirements of the Administrative Procedure Act, the Atomic Energy Act, and the Commission's Regulations were complied with by the Board. At this stage, it has not even been determined that there has been a violation of any legal requirement. To endorse or disavow a $100,000 penalty at this time, without adherence to any of the applicable laws, would hardly be a reasoned and responsible decision.

With regard to the implication that GPU tolerated cheating, I would note that the two persons, found by the Board to have cheated, voluntarily resigned and that the two persons suspected of cheating by the Board have been suspended without pay for two weeks. Moreover, I quote from the Licensing Board opinion of July 27, 1982:

> There is no evidence whatever that the large majority of the TMI-1 operators lacked competence and integrity. They have good cause to be unhappy with their treatment. Although the Commission appropriately acted in the broader public interest, the effect of the Notice of Hearing in this case was to void the full-power operator licenses of all the TMI-1 control room staff *without the scarcest element of due process*. The need to take the second NRC reexamination in October 1981 wiped out the benefits fairly earned by the honest candidates who passed the April reexamination. The entire proceeding with respect to examination integrity, although necessary, has been demoralizing, unfair to the honest operators, and, we

> are concerned, it may have been a distraction from their duties as control room operators.

Partial Initial Decision (Reopened Proceeding), July 27, 1982, 16 NRC 383 (emphasis added).

With regard to Commissioner Gilinsky's assertion that the Commission has been timid regarding the Licensing Board's finding that "the Station Manager and a company Vice President knowingly falsely certified to the NRC that a reactor operator was qualified to have his operator's license renewed," I note first that the Commission has directed the Office of Investigations to look into this matter and second that this direction implements the recommendation of the Licensing Board. Furthermore, I would note that it is not clear that a material false statement has been committed. The Licensing Board, in noting that a number of uncertainties exist about the incident and that the Station Manager was not a party to the cheating proceeding in which the incident was raised, recommended that he be given an opportunity to answer questions. It also recommended that a number of other people be interviewed for more information. Again, Commissioner Gilinsky urges precipitous action on the part of the Commission before all the facts are known in reaching a serious conclusion.

Finally, as an aside, I note that I do not share the belief expressed by the Commission in the first paragraph on page 1240.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

Today's decision is but another example of the Commission's refusal to confront the issue of whether GPU is competent to operate TMI Unit 1. The Commission cannot even bring itself to decide whether to endorse or to disavow the Licensing Board's symbolic fine of $100,000 chastizing the company for its tolerance of cheating by its employees on NRC exams. The Commission has been equally timid with regard to the Licensing Board's finding that the TMI Station Manager and a company Vice President knowingly falsely certified to the NRC that a reactor operator was qualified to have his operator's license renewed. The Commission should have taken direct review of both matters, giving particular attention to the Special Master's recommendations.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-289-SP**
(Restart)

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1) **October 22, 1982**

The Commission, noting that whether the licensee has satisfactorily completed the various restart requirements will be determined by the NRC Staff and the Commission itself outside of this adjudicatory proceeding, directs the Appeal Board not to concern itself with the current status of licensee's compliance with those requirements.

ORDER

The Appeal Board in ALAB-685 (16 NRC 449 (1982)) held that it had jurisdiction to pose questions to the Licensee and NRC Staff on the status of compliance with various restart requirements imposed by the Licensing Board. Although no party has appealed ALAB-685 and the Commission has decided not to review it *sua sponte*, the Commission believes that some guidance should be given to the Appeal Board.

The Commission has reaffirmed its August 9, 1979 statement that "[s]atisfactory completion of the required actions will be determined by the Director of Nuclear Reactor Regulation." CLI-79-8, 10 NRC 141, 148. The Commission

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intends for this adjudicatory proceeding to determine (1) what short-term and long-term actions are necessary and sufficient to adequately protect the public health and safety, and (2) whether Licensee has made "reasonable progress" toward completion of long-term items at the time of the Licensing Board's decision. Whether Licensee has satisfactorily completed short-term and long-term items will be determined by the NRC Staff and the Commission outside of this adjudicatory proceeding. Accordingly, the Appeal Board is not to concern itself with the current status of compliance.

Commissioner Gilinsky dissents from this opinion. The separate views of Commissioners Gilinsky and Roberts are attached.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 22nd day of October, 1982.

SEPARATE VIEW OF COMMISSIONER ROBERTS

While agreeing with the position taken in the instant Commission Order, I would have gone further and ruled that the Appeal Board does not have the authority to review *sua sponte* the entire Licensing Board record in this special proceeding.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

Even if the Appeal Board had erred in asking questions about the status of the restart requirements, this matter would not merit the Commission's intervention.

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*Commissioner Gilinsky, who had previously indicated his disapproval, was not present when this Order was affirmed. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

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Atomic Safety and Licensing Appeal Boards Issuances

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Vice Chairman
Dr. Lawrence R. Quarles
Dr. W. Reed Johnson
Thomas S. Moore
Christine N. Kohl
Stephen F. Eilperin
Gary J. Edles
Dr. Reginald L. Gotchy
Howard A. Wilber

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APPEAL BOARDS

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. W. Reed Johnson
Dr. Reginald L. Gotchy

In the Matter of **Docket No. 50-266-OLA**

WISCONSIN ELECTRIC POWER COMPANY
(Point Beach Nuclear Plant, Unit 1) **October 1, 1982**

The Appeal Board affirms a Licensing Board order (LBP-81-55, 14 NRC 1017 (1981)) authorizing the issuance of a license amendment permitting Unit 1 of this facility to operate without removing from service six degraded tubes that had been repaired by a sleeving technique. The Appeal Board also discusses the special "show cause" procedure and litigation standard employed by the Licensing Board for expediting the license amendment proceeding and advises that use of similar procedures should be avoided in the future.

RULES OF PRACTICE: BRIEFS

Exceptions not adequately briefed are waived. *Public Service Electric and Gas Company, et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49-50 (1981), *aff'd sub nom. Township of Lower Alloways Creek* v. *Public Service Electric and Gas Co.*, 687 F.2d 732 (3rd Cir 1982); *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-461, 7 NRC 313, 315 (1978); *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B and 2B), ALAB-367, 5 NRC 92, 104 n.59 (1977); *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 413-14, (1976).

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RULES OF PRACTICE: BRIEFS

When an intervenor is represented by counsel, an appeal board has no obligation to piece together or to restructure vague references in its brief in order to make intervenor's arguments for it. See *Salem, supra,* 14 NRC at 51.

RULES OF PRACTICE: APPELLATE PROCEDURE

The test of "finality" for appeal purposes is essentially a practical one. As a general matter, a licensing board's action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party's right to participate; rulings which do neither are interlocutory. *Toledo Edison Company, et al.* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 758 (1975).

RULES OF PRACTICE: APPELLATE PROCEDURE

The appealability of a licensing board order is determined by the nature of the order, not the name it bears. *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Nuclear Generating Station, Unit No. 1), ALAB-331, 3 NRC 771, 774 & n.5 (1976).

RULES OF PRACTICE: HEARING ON CONTENTIONS

Admission as a party to a Commission proceeding based, *inter alia,* on the proffering of at least one acceptable contention does not preclude summary disposition or guarantee a party a hearing on its contentions. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550 (1980).

APPEAL BOARD: STANDARD OF REVIEW (SCHEDULING OF HEARINGS)

An appeal board will not reverse a licensing board's scheduling rulings unless the "board abused its discretion by setting a hearing schedule that deprives a party of its right to procedural due process" [footnote omitted]. *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978).

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

While a licensing board should endeavor to conduct a licensing proceeding in a manner that takes account of the special circumstances faced by any participant, the fact that a party may possess fewer resources than others to devote to the proceeding does not relieve that party of its hearing obligations. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981).

APPEAL BOARD: SCOPE OF REVIEW *(SUA SPONTE)*

Sua sponte review of a licensing board's decision by an appeal board is a long-standing Commission-approved practice that is undertaken in all cases, regardless of their nature or whether exceptions have been filed. *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), ALAB-689, 16 NRC 887, 890 (1982). See *Boston Edison Company* (Pilgrim Nuclear Power Station, Unit 1), ALAB-231, 8 AEC 633 (1974).

APPEAL BOARD: SCOPE OF REVIEW *(SUA SPONTE)*

In conducting its *sua sponte* review, an appeal board does not ordinarily examine a licensing board's rulings on procedural matters. See *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 908 (1982); *Pilgrim, supra*, 8 AEC at 633-34.

RULES OF PRACTICE: LICENSING PROCEEDINGS

The procedures set forth in the Rules of Practice are the only ones that should be used (absent explicit Commission instructions in a particular case) in any licensing proceeding.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

A licensing board is not authorized to admit conditionally, for any reason, a contention that falls short of meeting the requirement of reasonable specificity set forth in 10 CFR §2.714. *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467 (1982).

RULES OF PRACTICE: CONTENTION REQUIREMENTS FOR INTERVENTION

The Commission's Rules of Practice do not permit an intervention petitioner to file a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or the NRC staff. *Id.* at 468.

RULES OF PRACTICE: DISCOVERY

Discovery on the subject matter of a contention in a licensing proceeding can be obtained only after the contention has been admitted to the proceeding. *Id.* at 467 n.12.

RULES OF PRACTICE: SUMMARY DISPOSITION

In the interest of expedition, a motion for summary disposition may be filed at any time in the course of a proceeding. 10 CFR §2.749(a). See also 46 *Fed. Reg.* 30328, 30330-31 (June 8, 1981). If the licensing board determines that there are no genuine issues of material fact, it may grant summary disposition even before discovery is otherwise completed if the party opposing the motion cannot identify what specific information it seeks to obtain through further discovery. 10 CFR §2.749(c). See also Fed. R. Civ. P. 56(f); *Sec. & Exch. Comm'n* v. *Spence & Green Chemical Co.* 612 F.2d 896, 901 (5th Cir. 1980), *cert. denied*, 449 U.S. 1082 (1981); *Donofrio* v. *Camp*, 470 F.2d 428, 431-32 (D.C. Cir. 1972).

RULES OF PRACTICE: EXPEDITING PROVISIONS

As a general matter when expedition is necessary, the Commission's Rules of Practice are sufficiently flexible to permit it by ordering such steps as shortening — even drastically in some circumstances — the various time limits for the party's filings and limiting the time for, and type of, discovery. See 10 CFR §2.711. See also *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452 (1981). Steps to expedite a case are appropriate only upon a party's good cause showing that expedition is essential. 10 CFR §2.711.

LICENSING BOARD: AUTHORITY TO REGULATE PROCEEDINGS

A licensing board's regulation of a proceeding pursuant to 10 CFR §2.718 should not encompass procedures fundamentally departing from those set forth in the Rules of Practice. See 10 CFR Part 2, Appendix A.

APPEARANCES

Ms. Kathleen M. Falk, Madison, Wisconsin, for the intervenor, Wisconsin's Environmental Decade.

Mr. Bruce W. Churchill and **Ms. Delissa A. Ridgway,** Washington, D.C., for the licensee, Wisconsin Electric Power Company.

Mr. Richard G. Bachmann for the Nuclear Regulatory Commission staff.

DECISION

In LBP-81-55, 14 NRC 1017 (1981), the Licensing Board authorized the Director of Nuclear Reactor Regulation to issue a license amendment for Wisconsin Electric Power Company's (WE's) Point Beach Unit 1 nuclear plant. This amendment permitted Unit 1 to be returned to service after a refueling outage during which, as a demonstration project, the licensee planned to repair a small number of degraded steam generator tubes by bridging the defective portions of each tube with a sleeve insert. The plant's technical specifications require that defective tubes be removed from service — not repaired. Hence, the amendment was necessary for the continued operation of the facility.[1] The Board's authorization was immediately effective[2] and no party to the amendment proceeding sought a stay.

We have before us the appeal of intervenor, Wisconsin's Environmental Decade (Decade), from the Licensing Board's order. Although Decade filed numerous exceptions to the Board's decision, its appellate brief adequately addresses only two. First, Decade seems to complain that the "show cause" procedure adopted by the Licensing Board to expedite the proceeding improperly required intervenor to

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[1] 10 CFR §50.59(a) provides that a licensee may make changes in a facility "without prior Commission approval, unless the proposed change . . . involves a change in the technical specifications incorporated in the license or an unreviewed safety question."

[2] 14 NRC at 1033. See 10 CFR §2.764(a).

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prove its contentions before trial. Second, Decade claims that the Board below erred in denying it a continuance, thereby unreasonably compressing intervenor's time to prepare for the show cause hearing. For the reasons discussed below, we affirm the Licensing Board's order.

I.

A. Before chronicling the somewhat convoluted procedural history of this case, a brief explanation of the nature of the steam generator repair problem that led to the proceeding is in order. The Wisconsin Electric Power Company's Point Beach Units 1 and 2 are identical Westinghouse two-loop pressurized water reactors. Each unit contains two steam generators, or heat exchangers, where water from the primary cooling system transfers heat to the secondary cooling loop. Because the tubes of the steam generator constitute the pressure boundary of the primary coolant system, a major safety consideration is that the steam generator tubes retain adequate structural integrity.[3]

Since both Point Beach units began commercial operation, the steam generator tubes have undergone varying degrees of degradation due to corrosion. The plant's technical specifications require WE to plug any steam generator tube (*i.e.*, to seal both ends so no primary coolant can enter it) when its level of degradation exceeds 40 percent of the nominal tube wall thickness. The technical specifications preclude the licensee from returning to service a tube degraded beyond this plugging limit even after it has been repaired by use of a newly developed sleeving technique. This process consists of installing, inside the degraded steam generator tube, a smaller diameter sleeve that spans the problem area of the original tube and thereby provides a new primary pressure boundary for the repaired tube.

B. On July 2, 1981, the licensee filed with the Director of the Office of Nuclear Reactor Regulation an application pursuant to 10 CFR §50.59 for amendments to the technical specifications of the operating licenses for Point Beach Units 1 and 2. If authorized, the amendments would allow (without any limitation on the numbers involved) the "repair of degraded or defective steam generator tubes by sleeving." The application also indicated that, during the fall 1981 refueling outage, licensee intended to sleeve several steam generator tubes (including six already defective and previously plugged ones) as a demonstration of this new process. This demonstration, the application stated, "can only be accomplished if the subject Technical Specification changes are granted." Notice of licensee's application was published in the *Federal Register* on August 7, 1981. 46 *Fed. Reg.* 40359.

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[3] For a discussion of the functioning of steam generators in nuclear power plants, see *Florida Power & Light Company* (Turkey Point Nuclear Generating Station, Units Nos. 3 and 4), ALAB-660, 14 NRC 987 (1981); *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-343, 4 NRC 169 (1976).

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Even before that notice was published, however, Wisconsin's Environmental Decade filed a petition to intervene and sought a hearing on the application. The petition set forth ten contentions relating to the health and safety consequences of the proposed sleeving repair program.[4] The petition was opposed by the licensee and the NRC staff. Subsequently, the Commission designated a Licensing Board to rule on the petition. 46 *Fed. Reg.* 43531 (Aug. 25, 1981).

Thereafter, on September 16, 1981 in a transcribed telephone conference initiated by the Licensing Board, counsel for licensee emphasized that it wished to implement the demonstration sleeving project on Unit 1 during the upcoming October-November refueling outage. The licensee also wished to complete any hearing on its proposed license amendment prior to a then-planned spring 1982 full-scale sleeving of Point Beach Unit 2.[5] Because of the imminence of the autumn outage, the licensee sought independent authorization for the demonstration program so that it could bring Unit 1 back up to power without replugging the six degraded tubes it wished to repair during the project. Tr. 7-9, 10, 11. The licensee additionally asked the Board to expedite the hearing schedule for its entire proposed amendment. Tr. 16.

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[4] Decade's contentions were as follows:

(1) Degradation of as few as one to ten steam generator tubes in a pressurized water reactor such as Point Beach could induce essentially uncoolable conditions in the course of loss of coolant accident, according to several independent scientific studies.

(2) Rupture of steam generator tubes in normal operation will release radiation to the environment from the secondary system, and, if the rupture is sufficiently severe, in amounts in excess of maximum permissible doses.

(3) During sleeving, the braze or weld between the upper rim of the sleeve and the inner surface of the original tube will weaken the integrity of the tube even in laboratory conditions, and, in the field, may fatally compromise its integrity. This may lead to a circumferential rupture of the tube under various operating and/or accident conditions.

(4) The annullus [sic] between the original tube and the sleeve may give rise to an unexpectedly corrosive environment where the tube is or may be suffering in the future from a through wall crack and secondary water impurities seep into the narrow space.

(5) The presence of the sleeve will make the interpretation of eddy current test results extremely difficult and increase the probability that tubes with incipient failures may go undetected and rupture during a loss of coolant accident.

(6) The insertion of a sleeve with a nominal outer diameter of ¾ inch tube inside the original ⅞ inch tube will reduce the flow of primary core cooling water and the cooling capacity of the core under various accident scenarios to an extent not bounded in previous safety analyses.

(7) The large number of workers required to perform a full scale sleeving program in the highly radioactive environment of the primary side of the steam generator will exceed the ability of the licensee or vendor to provide from their stable work forces. This will necessitate the employment of untrained and transient "jumpers" to perform the bulk of the work which quality may deteriorate as a consequence.

(8) The interests of the Petitioner are not adequately protected by any other party to this proceeding.

(9) The present technical specifications in the license require that tubes degraded beyond the plugging limit be removed from service by plugging and do not permit the proposed sleeving repair program.

(10) The best evidence strongly suggests that the actual cost of the proposed sleeving program will exceed projected costs by more than a magnitude of four.

[5] Licensee subsequently informed the Board that it planned to defer the full-scale sleeving at Unit 2 until spring 1983. See letter from licensee's counsel to Licensing Board (October 23, 1981). In early 1982, licensee confirmed this plan as to Unit 2, and notified the Board that it intended to *replace* both steam generators in Unit 1, rather than undertake further sleeving in that unit. See letter from licensee's counsel to Licensing Board (January 15, 1982).

In the interest of meeting licensee's schedule, but in view of the fact that petitioner Decade had not yet been formally admitted to the amendment proceeding, the Board indicated it would proceed with the demonstration project authorization and asked Decade to particularize its contentions as soon as possible. It also encouraged Decade to initiate immediately an informal exchange of information with the licensee and the staff. Tr. 49-50, 62-63, 69-70. Decade subsequently filed additional information as to its contentions on September 24, 1981.

On September 28, 1981, licensee filed a motion, accompanied by a detailed supporting affidavit, asking the Board to authorize operation of Point Beach Unit 1 following the demonstration sleeving. It also filed the following day a copy of a technical report prepared by Westinghouse Electric Corporation on the proposed sleeving program.

On October 1, 1981, the Licensing Board issued a memorandum and order (LBP-81-39, 14 NRC 819) in which it ordered licensee to respond to certain technical and legal questions concerning the motion for interim operation. The Board then formally authorized Decade to commence discovery and proposed a special "show cause" procedure and standard that would govern the litigation pertaining to the demonstration project, providing it were to admit Decade as an intervenor. As described by the Board (*id.* at 826):

> Decade and the Staff would have 14 days from receipt of WE's answers to Board questions to show cause why an Order authorizing immediate operation with up to 12 tubes sleeved should not be issued. Cause might consist of legal argument or of a substantive matter which should be pursued before the Board can reach a reasonable conclusion concerning the safety and environmental acceptability of the amendment. Cause could include comment on whether the demonstration proposed by WE is important to its overall sleeving program.

The Board stated that although these procedures were "unorthodox," it believed it necessary to deviate from the Commission's Rules of Practice in this case to provide "the timely decision that is required." *Id.* at 823.

On October 8, 1981, licensee filed a motion, with supporting affidavits, for summary disposition of Decade's contentions 3-6 insofar as they related to its request for interim operation. During a second telephone conference held on October 9, the Board indicated its tentative decision to admit Decade to the proceeding. Tr. 78. Following the conference, the Board issued a notice of hearing on the pending motions to be held in Milwaukee, Wisconsin, on October 29 and 30, 1981. 46 *Fed. Reg.* 50633 (Oct. 14, 1981). That same day, licensee submitted responses to the questions set out by the Board in LBP-81-39, *supra*.

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The Board issued two further memoranda and orders on October 13, 1981. In one (LBP-81-44, 14 NRC 850), the Board set out additional technical questions to be answered by licensee, and provided that, upon its receipt of licensee's answers, Decade would have seven days to show cause why the demonstration program should not go forward. In the other (LBP-81-45, 14 NRC 853), the Board formally admitted Decade's contentions 3, 4, 5 and 7, "simplified" into the following single contention (*id.* at 854, 860):

> Wisconsin Electric Power Company has not demonstrated that Point Beach Nuclear Plant, Units 1 and 2, will operate as safely with its degraded steam generator tubes sleeved as it would if they were required to be plugged.

The Board also set out discovery rules and indicated that, after discovery was completed (*id.* at 854-55),

> Decade will have the burden of coming forward to demonstrate that there are one or more genuine issues of fact related to this contention. [Licensee] will then have the burden of persuasion concerning the existence of a genuine issue of fact; and it will of course have the burden of persuasion on any issue admitted for hearing.

On October 15, 1981, the Board issued yet a further memorandum and order in which it set the agenda for the upcoming October 29-30 hearing (LBP-81-46, 14 NRC 862, 863):

> I. A show cause hearing concerning Wisconsin Electric Power Company's (WE) motion to obtain interim relief so that it can operate its power reactor with up to six deteriorated steam generator tubes sleeved rather than plugged.
>
> II. Additional argument, if any, concerning WE's motion for summary judgment. (However, the Board is inclined to rule that at this stage of a proceeding, when discovery has not yet been completed, the standards for summary judgment are the standards already articulated with respect to the show cause order.)
>
> III. If necessary, to conduct a limited evidentiary hearing for the purpose of helping to resolve the show cause or summary judgment motions.
>
> IV. If necessary and helpful, to conduct an evidentiary hearing on unresolved issues of material fact.

Decade filed its response in opposition to licensee's summary disposition motion on October 24, 1981. The response consisted primarily of a reiteration of its previous filings and was not accompanied by supporting affidavits. The staff responded (with accompanying affidavits) in support of the licensee's summary disposition motion on October 26.

Two additional prehearing telephone conferences were held on October 20 and 26, 1981. The October 20 conference dealt principally with the resolution of a dispute between Decade and the licensee concerning the protective agreement

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governing Decade's access to certain assertedly proprietary information in the Westinghouse sleeving report. See note 30, *infra*. The Board also modified the wording of its simplified contention. Tr. 164-65. In the final prehearing conference on October 26, the Board discussed and summarized the "show cause" demonstration it expected of Decade. Tr. 219-24. The Board characterized the standard several different ways: *e.g.*, Decade was to show an "important genuine issue" and the existence of "serious questions remaining in this case concerning the demonstration program" or, alternatively, the "specific reasons it requires additional time to respond adequately." Tr. 221, 223, 224.

A hearing was held in Milwaukee on October 29 and 30, 1981.[6] The Board heard oral argument on a motion (filed by Decade just three days earlier) for a continuance of the hearing, based on the asserted need for further discovery and more time to review WE's technical filings. The Board denied the motion (Tr. 399-402) and went on to hear legal argument by counsel for all parties and limited testimony by licensee and staff witnesses on certain aspects of the demonstration program. At the close of all testimony and argument, the Board orally authorized the issuance of a license amendment allowing Unit 1 to resume operation following the demonstration project. The Board subsequently memorialized the authorization in the memorandum and order that constitutes the basis for Decade's appeal. See LBP-81-55, 14 NRC 1017, *supra*.

II.

A brief comment on the intervenor's appellate papers is in order before turning to the other matters before us.

In a previous memorandum and order in this case, we noted that Decade's brief was "generally inadequate" and that "intervenor must bear full responsibility for any possible misapprehension of its position caused by the inadequacies of its brief and its determination not to attend oral argument to respond to Board questions." ALAB-666, 15 NRC 277, 278 (1982). Specifically, Decade's brief begins with a numbered list of seven "exceptions" to portions of the Licensing Board's decision followed immediately by a nine-page argument that neither specifies nor particularizes the exceptions to which it relates.[7] Nor are these distinctions discernible from the argument itself. As best we can determine, Decade's entire argument relates to its first two exceptions concerning the Licensing Board's adoption of the "show cause" proceeding and standard and the Board's denial of intervenor's motion for a continuance. See note 7, *supra*.

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[6] Decade filed its response to the Board's show cause orders (LBP-81-39 and LBP-81-45, *supra*) at the October 29 session. See Tr. 279-80.

[7] Under a heading entitled "*Portions of Initial Decision to Which Exception is Taken*," Decade's exceptions state (Exceptions and Brief at 2):

1. Standards for showing cause — Pages 6 to 7.
2. Ruling on Motion for Continuance — Page 8.
3. Admission of test results under trade secret protection — Page 10.
4. Ruling on Contention #3 — Pages 13 to 16.
5. Ruling on Contention #4 — Pages 16 to 17.
6. Ruling on Contention #5 — Pages 17 to 18.
7. Ruling on Contention #7 — Pages 18 to 19.

We have held numerous times that exceptions not adequately briefed are waived. See, *e.g.*, *Public Service Electric and Gas Company, et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49-50 (1981), *aff'd sub nom. Township of Lower Alloways Creek* v. *Public Service Electric and Gas Co.*, 687 F.2d 732 (3rd Cir. 1982); *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-461, 7 NRC 313, 315 (1978); *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B and 2B), ALAB-367, 5 NRC 92, 104 n.59 (1977); *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 413-14 (1976). As we stated in *Marble Hill, supra*, 7 NRC at 315 (footnotes omitted):

> [B]riefs are necessary to "flesh out" the bare bones of the exceptions, not only to give us sufficient information to evaluate the basis of objections to the decision below, but also to provide an opponent with a fair opportunity to come to grips with the appellant's arguments and attempt to rebut them. The absence of a brief not only makes our task difficult but, by not disclosing the authorities and evidence on which the appellant's case rests, it virtually precludes an intelligent response by appellees. For these reasons we generally follow the course charted by the Federal courts and disregard unbriefed issues as waived.

Because the argument contained in Decade's brief appears to relate to only its first two exceptions and intervenor fails to brief its remaining exceptions adequately, we shall consider intervenor's exceptions numbered 3 through 7[8] as abandoned. See 10 CFR §2.762(a), (f); *Pennsylvania Power and Light Company* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-693, 16 NRC 952 (1982). Moreover, because intervenor comes before us with counsel, we are neither required nor disposed to piece together or to restructure vague references in its brief in order to make Decade's arguments for it. See *Salem, supra*, 14 NRC at 51.

III.

A. At the threshold we must consider whether the Licensing Board's order is "final" and therefore appealable as a matter of right under 10 CFR §2.762(a). Both the licensee and the staff claim that intervenor's appeal is an impermissible interlocutory one proscribed by 10 CFR §2.730(f). They argue that the Rules of Practice permit interlocutory appeals only from orders granting or totally denying a

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[8] See note 7, *supra*.

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petition to intervene. See 10 CFR §2.714a. Here, the argument continues, the Board's decision neither denies Decade's intervention petition nor disposes of all of intervenor's contentions. Rather, it is only an *interim* one that permits operation of Unit 1 with six degraded steam generator tubes sleeved until the license amendment noticed for hearing can be finally decided. That proceeding, involving a request to permit operation with a large number of sleeved tubes, is currently ongoing, with Decade's contentions still at issue. Therefore, according to appellees, Decade's intervention petition has not been wholly denied and the intervenor's appeal is prohibited.

Although licensee and the staff are correct that the Rules of Practice permit interlocutory appeals only from orders granting or totally denying an intervention petition, that principle is inapposite in the circumstances presented. As we observed in *Toledo Edison Company, et al.* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 758 (1975) (footnotes omitted):

> The test of "finality" for appeal purposes before this agency (as in the courts) is essentially a practical one. As a general matter, a licensing board's action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party's right to participate; rulings which do neither are interlocutory.

In our view, the Licensing Board's order authorizing a license amendment disposes of a "major segment" of this case and is a final appealable order. Indeed, practically viewed, the Board's decision concludes one entire license amendment proceeding. Compare *Louisiana Power and Light Company* (Waterford Steam Electric Station, Unit 3), ALAB-690, 16 NRC 893 (1982).

The appellees characterize the Board's order as an interim operation decision.[9] But that label elevates form over substance, and it is settled that the question of appealability is determined by the nature of the order, not the name it bears. *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Nuclear Generating Station, Unit No. 1), ALAB-331, 3 NRC 771, 774 & n.5 (1976). In reality, the order authorized the second of two separate license amendments sought by WE. The first amendment, requested by licensee's July 2, 1981 application and still under consideration, would modify the technical specifications of both Point Beach units to permit operation (irrespective of the number of tubes involved) with previously degraded tubes sleeved. The second amendment, requested by licensee on September 28, 1981 and prompted by the impossibility of concluding the first amendment proceeding before the October refueling outage, authorized licensee to return Unit 1 to operation after conducting the more limited demonstration sleeving program on the six degraded tubes. It is this order that Decade appeals.

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[9] Interestingly, the Licensing Board neither titled its decision as "interim" nor characterized its order as temporary. See 14 NRC at 1018, 1033.

The Board's order is comparable to any initial decision authorizing a license amendment and, thus, is a final appealable order. See *Wolf Creek, supra*, 3 NRC at 774. It concluded all proceedings on the demonstration program. Without the amendment authorization, WE would have been unable to operate Unit 1 without first plugging the six newly sleeved tubes. Hence, important consequences flowed from the Board's order. Moreover, if WE should for any reason withdraw its first amendment application, the Unit 1 amendment authorized by the Board's order will remain in effect. In these circumstances, the pendency of a proceeding on the July 2 amendment request is irrelevant to a determination of the finality and appealability of the Board's order now before us.

B. Decade's first exception is to the Licensing Board's "[s]tandards for showing cause."[10] Its brief, however, provides little useful elaboration on this point. Decade variously argues that the Licensing Board's decision "is based upon an implied legal test requiring an intervenor to prove his or her case in order to secure the same hearing at which time the opportunity to make such a proof is customarily provided" and it "required intervenor[ ] to prove [its] case *prior to the hearing* instead of merely showing that the contention had a sufficient basis to justify a trial." Exceptions and Brief at 1-2, 3.[11] It appears therefore that Decade challenges the Board's adoption of the "show cause" procedure and standard. In our view, Decade's arguments fail.

In its October 1, 1981 order, the Licensing Board proposed what it styled a "show cause" proceeding to resolve Decade's challenge to the licensee's proposed demonstration sleeving project. The Board's order directed a series of questions to the licensee about its demonstration project and proposed that "Decade . . . have 14 days from receipt of WE's answers to Board questions to show cause why an Order authorizing immediate operation with up to 12 tubes sleeved should not be issued." LBP-81-39, *supra*, 14 NRC at 826. The Board then ordered the "parties and petitioner . . . to comment on the issuance of the show cause order discussed in the accompanying memorandum." *Id.* In response to that directive, neither Decade nor the other parties objected to the Board's proposed adoption of the "show cause" procedure or standard. Rather, Decade responded that "[i]n the interests of accommodating the Board's desire to rule on the Licensee's interim application in the time requested, we will endeavor to meet the proposed 14 day filing deadline to respond to the utility's answers to the Board's questions."[12] Indeed, three days later during the October 9 telephone conference, Decade's counsel orally agreed to the Board's adoption of the "show cause" procedure and standard for resolving Decade's challenge to WE's demonstration sleeving project.[13] Further, at no other time prior to the October 29-30 hearing did Decade

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[10] See note 7, *supra*.

[11] See also Exceptions and Brief at 6, 10.

[12] Letter from Decade's counsel to the Licensing Board (October 6, 1981).

[13] Tr. 110.

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object. Having been specifically offered the opportunity to demur but having failed timely to object, Decade cannot now be heard to complain about the "show cause" procedure adopted by the Board.

In addition, Decade's assertion that the Board required it to prove its case prior to trial misstates the "show cause" standard adopted by the Board. The Board variously set forth that standard[14] but its theme remained the same. As the Board stated in its final memorandum, Decade was to establish that "it can either demonstrate the existence of a genuine issue of fact or can show that there is a good reason for the Board to defer judgment until after specific discovery requests are made and answered." LBP-81-55, *supra*, 14 NRC at 1021. The first part of the Board's standard is a paraphrase of the essential element of 10 CFR §2.749(a) that requires a party opposing a motion for summary disposition to "annex[ ] to any answer opposing the motion a separate, short and concise statement of the material facts as to which it is contended that there exists a genuine issue to be heard." Compare Fed. R. Civ. P. 56(c), (e). Likewise, the second part of the Board's standard is a paraphrase of the essential element of 10 CFR §2.749(c) that permits a party opposing a motion for summary disposition to seek a deferral of action on the motion by demonstrating, with affidavits, "that he cannot, for reasons stated, present by affidavit facts essential to justify his opposition." Compare Fed. R. Civ. P. 56(f). Thus, the Board's adoption of what is styled a "show cause" standard was, in effect, nothing more or nothing less than an adoption of the essential elements of the Commission's rules for properly opposing a motion for summary disposition. And, the Commission's summary disposition rule, like Rule 56 of the Federal Rules of Civil Procedure after which it is modelled, does not require a party opposing a motion for summary disposition to prove its case before trial.[15] Rather, it is a procedural device to screen contentions that do not involve real factual controversies. See p. 1263, *infra*. Thus, in the circumstances, the Board's adoption of the "show cause" standard, with the consent of all the parties, was not reversible error. As we discuss below, however (pp. 1262-63, *infra*), the Board's unusual approach resulted in what we view to be an unnecessarily confusing proceeding, and should not be employed in the future.

C. Decade has effectively abandoned its exceptions numbered 4-7[16] by its failure to brief them adequately. Those exceptions apparently challenged the

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[14] See, *e.g.*, LBP-81-45, *supra*, 14 NRC at 854; LBP-81-46, *supra*, 14 NRC at 863; Tr. 221-24.

[15] It appears from the record of this proceeding that Decade may have seriously misapprehended the basic structure of Commission proceedings. For example, during the October 20, 1981 telephone conference, Decade's counsel stated: "By the Board's acceptance of contentions of fact, they have, in my understanding of the law, automatically precluded a Motion for Summary Disposition." Tr. 153. See also Exceptions and Brief at 3. But a proper contention only gains an intervenor admission to a licensing proceeding. Admission as a party to a Commission proceeding — like party status in a case governed by the Federal Rules of Civil Procedure — does not preclude summary disposition or guarantee a party a hearing on its contentions. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550 (1980).

[16] See note 7, *supra*.

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Board's rulings on intervenor's contentions 3, 4, 5 and 7. Nevertheless, we have reviewed those rulings that applied the "show cause" standard to Decade's admitted contentions and find the Board's result justified. With regard to each of Decade's contentions, we are satisfied that the Board's application of that standard was the functional equivalent of a proper grant of summary disposition.

As noted above, the licensee filed a motion, with supporting affidavit, for summary disposition of intervenor's contentions 3-6.[17] The staff responded in support of licensee's motion with two additional affidavits, also asserting that there were no genuine issues of material fact with respect to these contentions. Although Decade replied to the licensee's motion on October 24, 1981 asserting that the motion should be denied, it did not file any affidavits setting forth "specific facts showing that there is a genuine issue of material fact," or a "short and concise statement of the material facts as to which it is contended that there exists a genuine issue to be heard." 10 CFR §2.749(b), (a). Instead, Decade's response consisted solely of the unadorned claim that intervenor's contentions 3-6 were relevant to WE's proposed sleeving project. Nor, alternatively, did Decade's response establish by affidavit or otherwise that it could not yet obtain affidavits to establish such a genuine issue or identify what further discovery was necessary to establish such an issue. 10 CFR §2.749(c). Decade similarly failed to make either showing in its "show cause" response[18] or during the course of its argument at the October 29-30 hearing.

In these circumstances, intervenor failed either to show cause why the licensee's demonstration sleeving project should not be authorized or to oppose properly WE's motion for summary disposition. The licensee's summary disposition motion and supporting affidavit demonstrated that there were no genuine issues of material fact to be heard as to those contentions, that the affiant was fully competent to testify about these matters, and that WE was entitled to a decision as a matter of law. Therefore, the Board's action was justified and equivalent to a proper grant of WE's motion for summary disposition.[19]

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[17] Decade's Contention 6, however, was not admitted by the Board as a proper contention.

[18] Decade's Response to the Chairman's Comments on Order to Show Cause (October 29, 1981).

[19] The licensee's motion for summary disposition did not seek judgment on Decade's contention 7. That contention concerns the adequacy of the training for the large number of temporary channel head workers who will be conducting a portion of the sleeving repairs on WE's full-scale sleeving of the Point Beach units. See note 7, *supra*. Because contention 7 by its terms was inapplicable to the licensee's demonstration sleeving project and the Licensing Board did not admit contention 7 until after WE filed its motion for summary disposition, the licensee did not include that contention in its motion. Putting to one side the question of the Licensing Board's admission of contention 7 to the demonstration project proceeding, that contention's omission from the summary disposition motion, in the circumstances, is immaterial. The licensee's responses to both the Board's questions and Decade's discovery requests demonstrated there was no genuine issue of material fact concerning contention 7. Further, Decade was unable even to proffer any speculation as to how its contention could affect the efficacy and safety of the demonstration sleeving project when aligned against the licensee's training and quality assurance programs for the project. See Tr. 622-26; LBP-81-55, *supra* 14 NRC at 1031-32.

D. Decade also takes exception to the Licensing Board's ruling on intervenor's motion for a continuance.[20] As we have already pointed out, Decade's appellate papers are not clear. As best we can determine, Decade seems to argue that the Licensing Board's denial of its motion for a continuance effectively precluded intervenor — a citizens' organization with limited resources, which already was pressed by the Board's prehearing schedule — from completing discovery and preparing for the Board's "show cause" hearing. Exceptions and Brief at 5-6. That hearing was scheduled on October 9 for October 29, 1981.[21]

Disposition of this issue need not detain us long. We will not reverse a licensing board's scheduling rulings unless the "board abused its discretion by setting a hearing schedule that deprives a party of its right to procedural due process" [footnote omitted]. *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978). Even putting to one side the lateness of intervenor's request for a delay, no due process violation is apparent on the record before us. Rather, the record shows that although the time for case preparation was compressed, it was not so unreasonable as to deny Decade an adequate opportunity to prepare. Indeed, as the Licensing Board observed, "[t]o the extent that these problems have existed, they are problems of Decade's own creation." LBP-81-55, *supra*, 14 NRC at 1025.

In common with the licensee and the staff, Decade consented to the Board's "show cause" proceeding.[22] The intervenors understood that the very purpose of this special procedure was to expedite the proceeding so that licensee, if possible, could undertake the demonstration sleeving project before the end of the October refueling outage, *i.e.*, early November.[23] And as part of its effort to speed up the proceeding, the Board took a number of steps to aid intervenor. On September 16, 1981, it encouraged the parties to commence discovery even before it ruled on the admissibility of Decade's contentions.[24] Subsequently, upon receipt of the Westinghouse sleeving report, the Board immediately propounded a detailed set of questions to WE, which the licensee answered on October 9.[25] To help the intervenor even further, the Board severely restricted discovery against Decade so as not to hinder intervenor's case preparation.[26] Yet, Decade directed no discovery requests to the licensee until October 24 — more than two weeks after the hearing

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[20] See note 7, *supra*.

[21] See p. 1252, *supra*. See also LBP-81-46, *supra*, 14 NRC at 862-63.

[22] See pp. 1257-58, *supra*.

[23] See letter from Decade's counsel to Licensing Board (October 6, 1981).

[24] See Tr. 49-50, 69-70.

[25] See p. 1252, *supra*; LBP-81-55, *supra*, 14 NRC at 1020. The licensee made the sleeving report available to Decade as well, but the intervenor refused to review the document until later in the proceeding. See note 30, *infra*.

[26] See LBP-81-39, *supra*, 14 NRC at 823; LBP-81-46, *supra*, 14 NRC at 863.

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was scheduled and less than one week before it was to begin.[27] In any event, the licensee quickly responded in only three days.[28] In these circumstances, where the intervenor failed to utilize the discovery procedures available to it until the eleventh hour, the Licensing Board's denial of Decade's motion to delay the proceeding for further discovery was not error.[29]

In addition, the record shows that Decade's own actions significantly abridged its preparation time. By refusing to sign a protective agreement concerning the proprietary information contained in the sleeving report and other materials provided by licensee, Decade drastically foreshortened its time to prepare for the hearing.[30] The Commission's rules contemplate a resolution of proprietary information disputes after the merits are resolved in order to avoid delay in proceedings. See 10 CFR §2.790(b)(6). The Board indicated it would follow this course. See Tr. 87-92, 101-02; LBP-81-55, *supra*, 14 NRC at 1024-25. Decade was, of course, free, as a litigation tactic, to seek an immediate resolution of the proprietary information issue, but it must be willing to accept the consequences of adhering to its position in the face of the Board's adverse ruling. It may not now be heard to complain that it was deprived of adequate time to prepare for the "show cause" hearing when its own actions abbreviated its preparation time.[31] Accordingly, the

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[27] See Decade's First Interrogatories and Request for Production of Documents to Licensee on the Demonstration Sleeving Program (October 24, 1981). See also LBP-81-55, *supra*, 14 NRC at 1025.

[28] See Licensee's Response to Decade's First Interrogatories (October 27, 1981). See also LBP-81-55, *supra*, 14 NRC at 1020.

[29] Similarly, on the record before us, we are unpersuaded by Decade's argument that its lack of resources entitled it to special consideration when it sought a continuance. As the Commission has stated: "While a board should endeavor to conduct the proceeding in a manner that takes account of the special circumstances faced by any participant, the fact that a party may . . . possess fewer resources than others to devote to the proceeding does not relieve that party of its hearing obligations." *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981).

[30] The licensee made the sleeving report available to Decade at the end of September when it submitted the report to the staff and the Board. Because the manufacturer considered much of the information contained in the report to be proprietary, licensee conditioned Decade's receipt of the report on intervenor's execution of a protective agreement. Decade refused, wanting instead the public release of the report. See letter from Decade's counsel to licensee's counsel (October 6, 1981). Thus Decade denied itself access to the report until October 9 when the matter was apparently resolved in the course of the telephone conference (see Tr. 87-92) and a copy of the report was delivered to Decade. Decade subsequently discontinued its review of the sleeving report when a further dispute arose with licensee as to the terms of the protective agreement; however, Decade did not notify the licensee or the Board that it had done so, contrary to the Board's directive in the October 9 conference. Tr. 92. Neither did Decade seek any specific relief. See LBP-81-55, *supra*, 14 NRC at 1020-21, 1025; Tr. 155-57. Hence, Decade did not undertake a review of the sleeving report until October 20, when in the course of the telephone conference, the Board ordered adoption of the protective agreement as framed by the licensee. Tr. 143.

[31] As part of its argument regarding the Board's denial of its motion for a continuance, Decade asserts that the Board ordered the proceeding expedited "even though the Licensee's formal representations to the Board did not include any statement of reason why the demonstration program was immediately necessary." Exceptions and Brief at 4. But Decade's assertion is irrelevant to its argument that the Board erred in denying it a continuance; moreover, intervenor filed no exception to perfect an appeal on this issue. In any event, even assuming the validity of Decade's assertion, such action by the Licensing Board would not be reversible error where Decade was given an adequate time to prepare for the "show cause" hearing.

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Board's denial of Decade's motion was not an abuse of discretion arising to the level of a due process violation.

IV.

A. Quite apart from the two issues we can discern from Decade's brief, we have undertaken our customary *sua sponte* review of the Licensing Board's decision and the underlying record. As we recently observed in *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), ALAB-689, 16 NRC 887, 890 (1982), "[t]his long-standing Commission-approved appeal board practice is undertaken in all cases, regardless of their nature or whether exceptions have been filed" [footnote omitted]. See *Boston Edison Company* (Pilgrim Nuclear Power Station, Unit 1), ALAB-231, 8 AEC 633 (1974).

Our review of the record below on the substantive safety and environmental issues has disclosed no error requiring corrective action. We have found no basis for concluding that the licensee's sleeving of six Unit 1 steam generator tubes (with degradation beyond the plugging limit) might either pose an undue risk to the public health and safety or have a significant effect on the environment.

B. In conducting our *sua sponte* review, we do not ordinarily examine a licensing board's rulings on procedural matters. See *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 908 (1982); *Pilgrim, supra,* 8 AEC at 633-34. Here, we see no need to deviate far from that practice because all parties were represented below by counsel capable of addressing any substantial error affecting their clients' interests. But we believe a few general observations on the procedures employed by the Licensing Board are in order.

As we previously explained, all parties consented to the Licensing Board's "show cause" procedure and standard for resolving Decade's challenge to WE's license amendment application. Further, in deciding Decade's appeal, we have concluded that the Board's application of the "show cause" standard was, in effect, the equivalent of the standard applicable to the grant of summary disposition on each of Decade's admitted contentions. Accordingly, we have affirmed the Board's result. In the future, however, procedures such as those employed by the Licensing Board should be avoided. Here, the Board employed a "show cause" procedure and such other steps as ordering the commencement of discovery before admitting Decade as a party or ruling on the adequacy of intervenor's contentions. See LBP-81-39, *supra,* 14 NRC at 822-23, 826. It recognized these procedures were "extraordinary" (*id.* at 821) and "unusual" (LBP-81-44, *supra,* 14 NRC at 851) but determined they were necessary to expedite the case because the Rules of Practice only "should be used as helpful tools" and the "usual procedural tools will not provide us with the timely decision that is required." LBP-81-39, *supra,* 14 NRC at 823.

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Although the goal of speedy resolution of Commission proceedings is a commendable one, the Board's conclusion that the procedures dictated by the Rules of Practice could not provide a timely decision in this case is badly in error. Rather, the procedures set forth in the Rules of Practice are the only ones that should be used (absent explicit Commission instructions in a particular case) in any licensing proceeding. For example, we recently had occasion to comment in *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467 (1982), on several of the relevant practice rules and those remarks bear repeating: "[A] licensing board is not authorized to admit conditionally, for *any* reason, a contention that falls short of meeting the specificity requirements." Similarly, "the Rules of Practice [do not] permit[ ] the filing of a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or staff." *Id.* at 468. Finally, "discovery on the subject matter of a contention [can] be obtained only after the contention [has] been admitted to the proceeding." *Id.* at 467 n.12.

We have stated that the summary disposition procedures in the Rules of Practice "provide in reality as well as in theory[ ] an efficacious means of avoiding unnecessary and possibly time-consuming hearings on demonstrably insubstantial issues." *Allens Creek, supra,* 11 NRC at 550. In the interest of expedition, the Rules provide that a motion for summary disposition may be filed at any time in the course of a proceeding. 10 CFR §2.749(a). See also 46 *Fed. Reg.* 30328, 30330-31 (June 8, 1981). Further, if the Board determines that there are no genuine issues of material fact, it may grant summary disposition even before discovery is otherwise completed if the opposing party cannot identify what specific information it seeks to obtain through further discovery.[32]

As a general matter when expedition is necessary, the Rules of Practice are sufficiently flexible to permit it by ordering such steps as shortening — even drastically in some circumstances — the various time limits for the party's filings and limiting the time for, and type of, discovery. See 10 CFR §2.711. Other steps may also be taken. See *Statement of Policy on Conduct of Licensing Proceedings,* CLI-81-8, 13 NRC 452 (1981). But a licensing board's regulation of a proceeding pursuant to 10 CFR §2.718 should not encompass procedures fundamentally departing from those set forth in the Rules of Practice. See 10 CFR Part 2, Appendix A. Here, more judicious application of these principles would have not only provided for a timely decision but also resulted in a less confusing proceeding. Moreover, it must be remembered that steps to expedite a case are appropriate only upon a party's good cause showing that expedition is essential. 10 CFR §2.711. Necessarily, any decision on this question involves a balancing of the competing interests of the parties, but it is inappropriate to order a proceeding expedited before a good cause showing by the party seeking expedition has been made.

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[32] 10 CFR §2.749(c). The federal courts apply the same principles. See Fed. R. Civ. P. 56(f); *Sec. & Exch. Comm'n* v. *Spence & Green Chemical Co.*, 612 F.2d 896, 901 (5th Cir. 1980), *cert. denied*, 449 U.S. 1082 (1981); *Donofrio* v. *Camp*, 470 F.2d 428, 431-32 (D.C. Cir. 1972).

For the foregoing reasons, the November 5, 1981 order of the Licensing Board is *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara M. Tompkins
Secretary to the
Appeal Board

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Cite as 16 NRC 1265 (1982) **ALAB-697**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Lawrence R. Quarles

In the Matter of **Docket No. 50-289-SP**
(Emergency Planning)

METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island Nuclear
Station, Unit No. 1) **October 22, 1982**

In the first of its appellate decisions in this special proceeding to determine whether Unit 1 of this facility should be permitted to resume operation, the Appeal Board affirms the Licensing Board's disposition of the emergency planning issues raised on appeal by the intervenors *pro se* from the Licensing Board's second partial initial decision (LBP-81-59, 14 NRC 1211 (1981)), subject to the condition that the Commonwealth of Pennsylvania's agricultural information brochure be distributed to all farmers in the plume exposure pathway emergency planning zone prior to restart.

EMERGENCY PLANNING: NOTIFICATION REQUIREMENTS

Under Commission emergency planning regulations, licensees must establish procedures for notification of state and local emergency response organizations and must have the capability to notify responsible state and local governmental agencies within fifteen minutes of declaration of an emergency. 10 CFR 50.47(b)(5); 10 CFR Part 50, Appendix E, Sec. IV.D.3. Provision must also be

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made for prompt communications among principal response organizations to emergency personnel. 10 CFR 50.47(b)(6).

EMERGENCY PLANNING: EMERGENCY PLANNING ZONES

Commission regulations designate two regions to be used for emergency planning purposes. The "plume exposure pathway emergency planning zone" consists of an area with a radius of approximately 10 miles surrounding a nuclear power facility. The "ingestion exposure pathway emergency planning zone" is an area with a radius of approximately 50 miles surrounding the facility. 10 CFR 50.47(c)(2).

RULES OF PRACTICE: BURDEN OF PROOF

In NRC licensing proceedings, the licensee or applicant generally bears the ultimate burden of proof. 10 CFR 2.732.

EMERGENCY PLANNING: PUBLIC EDUCATION REQUIREMENTS

Pursuant to 10 CFR 50.47(b)(7), licensees must periodically make information available to members of the public concerning how they will be notified and what their initial actions should be in an emergency. Provisions must be made for yearly dissemination of "basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency." 10 CFR Part 50, Appendix E, Section IV.D.2. These general standards and the guidelines set out in NUREG-0654, FEMA-Rep-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (November 1980) provide a reasonable framework for evaluating the sufficiency of educational material.

EMERGENCY PLANNING: PROTECTIVE MEASURES (LIVESTOCK)

The Commission's emergency planning regulations do not require any protective measures for livestock unless they are necessary to protect the farmers. See 10 CFR 50.47(b)(10), (c)(2).

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EMERGENCY PLANNING: EMERGENCY PLANNING ZONES (INGESTION EXPOSURE PATHWAY)

The exact size and configuration of the ingestion exposure pathway emergency planning zone surrounding a nuclear plant are determined "in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries." 10 CFR 50.47(c)(2). Protective actions that are appropriate to the locale must be developed for the ingestion exposure pathway EPZ. 10 CFR 50.47(b)(10).

TECHNICAL ISSUES DISCUSSED

Emergency plans;

Environmental detection of radioactive iodine following accidental releases of radioactivity.

APPEARANCES

Mr. Robert E. Zahler, Washington, D.C. (with whom **Messrs. George F. Trowbridge** and **Thomas A. Baxter,** and **Ms. Delissa A. Ridgway** were on the brief), for Metropolitan Edison Co., *et al.*, licensee.

Mr. Norman O. Aamodt, Coatsville, Pennsylvania (with whom **Ms. Marjorie M. Aamodt** was on the brief), and **Dr. Bruce Molholt,** Philadelphia, Pennsylvania, as representative of Mr. Norman O. Aamodt and Ms. Marjorie M. Aamodt, intervenors *pro se*.

Mr. Joseph R. Gray (with whom **Messrs. James M. Cutchin, IV,** and **Jack R. Goldberg** and **Ms. Mary E. Wagner** were on the brief) for the Nuclear Regulatory Commission staff.

DECISION

This is the first of several decisions arising out of our appellate review in the Three Mile Island restart proceeding. A detailed procedural history of this case is set forth in the Licensing Board's first partial initial decision, and we need not

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repeat it here.[1] In essence, after the accident that occurred at Unit 2 of the Three Mile Island nuclear facility on March 28, 1979, the Commission ordered Unit 1 of that facility to remain in a cold shutdown condition. (Unit 1 was, by coincidence, coming up to full power after a refueling outage and was immediately shut down by the licensee following the TMI-2 accident.) The Commission at that time indicated that, based on its preliminary review of the Unit 2 accident chronology, it lacked the necessary reasonable assurance that the Unit 1 facility could be operated without endangering the health and safety of the public. Thereafter, the Commission ordered that a hearing be held to determine whether Unit 1 should be permitted to resume operation and, if so, under what conditions.[2] At issue are the licensee's management capability and technical resources, the adequacy of Unit 1 design and procedures, separation of Units 1 and 2, and emergency preparedness.[3] Hearings on these matters lasted nearly two years and produced a transcript of over 27,000 pages, as well as hundreds of exhibits. The Licensing Board has issued three separate partial initial decisions, plus companion orders dealing with environmental concerns and the monitoring of improvements found to be required; together, they comprise over 1,300 typewritten pages. Now before several Appeal Boards are various appeals from those decisions.

The Licensing Board issued its decision in parts to allow the maximum time for Commission review.[4] On August 27, 1981, the Board issued its first partial initial decision on licensee's management competence but retained jurisdiction over management issues to inquire into allegations of cheating on examinations given to licensee's reactor operators.[5] Then, on December 14, 1981, the Board issued its second partial initial decision concerning plant design and procedures, separation of units, and emergency planning.[6] A separate decision dealing with environmental matters was issued a day later.[7] The final partial initial decision on management capability, addressing the cheating inquiry, was issued on July 27, 1982.[8]

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[1] See *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit 1), LBP-81-32, 14 NRC 381, 386-99 (1981) (procedural background and management issues, ¶¶1-588, at ¶¶1-36).

[2] See CLI-79-8, 10 NRC 141 (1979).

[3] The operating license for Unit 1 (now suspended) lists GPU Nuclear Corporation, Metropolitan Edison Company, Jersey Central Power and Light Company, and Pennsylvania Electric Company as licensees. For convenience, we refer to them collectively as "the licensee" throughout this decision.

[4] See LBP-81-32, note 1, *supra*, 14 NRC at 399 (PID ¶36). The Commission originally intended to review the Licensing Board's decision itself but later directed that an Appeal Board be designated to hear initial appeals. See CLI-81-19, 14 NRC 304 (1981). Whether, or when, TMI-1 is permitted to restart, however, is before the Commission as part of its immediate effectiveness review. CLI-81-34, 14 NRC 1097 (1981). In an order served on October 6, 1982, the Commission announced its intent to rule by December 10 on whether to lift the immediate effectiveness of its order that TMI-1 remain in cold shutdown.

[5] LBP-81-32, note 1, *supra*, 14 NRC at 402-403 (PID ¶¶44-45).

[6] LBP-81-59, 14 NRC 1211 (plant design, procedures, and separation, PID ¶¶589-1329; emergency planning, PID ¶¶1330-2028).

[7] LBP-81-60, 14 NRC 1724 (1981).

[8] LPB-82-56, 16 NRC 281 (PID ¶¶2029-2425).

Exceptions have been filed to each partial initial decision. Our review is divided among different Appeal Boards and has been segmented to correspond to the three major categories of issues in the proceeding: (1) management capability; (2) plant design, procedures, environment, and separation; and (3) emergency planning.[9] This decision concerns only those emergency planning issues raised on appeal by intervenors *pro se*, Norman and Marjorie Aamodt. The remaining emergency planning issues are addressed in a companion decision which is also being issued today.[10] Matters of management competence (including the reopened proceeding on cheating), as well as plant design, procedures, environment, and separation, will be considered in subsequent decisions.

Emergency preparedness received considerable attention at the restart hearing. As described in the Licensing Board's decision, the record on emergency planning "consists of approximately seven thousand transcript pages, over a thousand pages of written direct testimony, and many thousands of pages of exhibits."[11] The parties litigated over one hundred contentions encompassing many detailed aspects of emergency planning. During the course of the proceedings, the Commonwealth and the licensee continued to revise and improve their emergency plans, with the result that some contested matters were rendered moot by subsequent developments. Only a handful of issues remain for disposition on appeal, suggesting that, in most respects, the parties are essentially satisfied with the Licensing Board's decision.

Licensee and the Commonwealth of Pennsylvania each urge reversal of only one aspect of the Licensing Board's decision. Their appeals are considered in ALAB-698, note 10, *supra*. The Aamodts challenge the adequacy of the Board's decision in only four subject areas: information transmittal, public education, emergency plans for farmers, and the ingestion exposure pathway. For reasons explained below, we affirm the Licensing Board's disposition of those emergency planning issues raised by the Aamodts.

I. INFORMATION TRANSMITTAL

Commission regulations provide that licensees must establish procedures for notification of state and local emergency response organizations. 10 CFR 50.47(b)(5). They require that licensees have the capability to notify responsible state and local governmental agencies within fifteen minutes of declaration of an emergency. 10 CFR Part 50, Appendix E, Sec. IV.D.3. Provision must also be made for prompt communications among principal response organizations to emergency personnel. 10 CFR 50.47(b)(6).

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[9] Mr. Edles and Dr. Buck are assigned to review all three phases of the TMI restart proceeding. Participating with them are Ms. Kohl for the management phase, Dr. Gotchy for the technical issues and certain emergency planning and environmental matters, and Dr. Quarles for the Aamodts' emergency planning appeal.

[10] ALAB-698, 16 NRC 1290 (1982). This division of emergency planning issues was a result of Dr. Gotchy's recusal from the Aamodt appeal. See our order of June 8, 1982 (unpublished) and Dr. Gotchy's June 8, 1982 memorandum to the parties.

[11] LBP-81-59, note 6, *supra*, 14 NRC at 1455 (PID ¶1330).

According to the licensee's and the Commonwealth's emergency plans, when the licensee determines that an emergency of some kind exists at TMI-1, it immediately notifies the Nuclear Regulatory Commission, the Pennsylvania Emergency Management Agency (PEMA), and Dauphin County. PEMA, in turn, is responsible for notifying the Commonwealth's Bureau of Radiation Protection (BRP) as well as local jurisdictions other than Dauphin County. Rogan, *et al.*, fol. Tr. 13,756, at 86-87; Chesnut, fol. Tr. 15,007, at 38; Licensee Ex. 30, §4.6.1, at 6-1. In the event of a "general emergency," which is the most serious of the four categories of emergency used by licensee and the Commonwealth,[12] the licensee must immediately and directly notify the NRC, PEMA, and all five local "risk counties."[13] Licensee's emergency plan calls for initial notification by telephone. Rogan, *et al.*, fol. Tr. 13,756, at 62. In every case, the counties are apprised of the emergency class, the populace and geographical areas potentially affected, the type and magnitude of potential or actual radiological releases, and any protective action recommendations. Chesnut, fol. Tr. 15,007, at 31-32; Licensee Ex. 30 at 6-3. As the Licensing Board explained, the assignment of responsibility to PEMA to notify the BRP and most local authorities is normal operating procedure during non-nuclear as well as nuclear emergencies, has been successfully used on numerous occasions, and provides for a consistent chain of command.[14]

On appeal, the Aamodts argue that initial notification by telephone is inadequate and that available backup systems have not been proven reliable.[15] They maintain that ordinary telephone circuits can be expected to be busy in the event of an accident. For this reason, they contend that dedicated lines should be required for notification of all five risk counties in the event of a general emergency. Aamodt Brief (March 9, 1982) at 1-2. Licensee and the NRC staff respond that dedicated lines are not necessary. They also argue that the Aamodts' assertions are based on a mischaracterization of the record.[16]

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[12] The Commission's emergency planning regulations require the use of a "standard emergency classification and action level scheme" that includes the following emergency classes: (1) unusual event, (2) alert, (3) site area emergency, and (4) general emergency. 10 CFR 50.47(b)(4); 10 CFR Part 50, Appendix E, Section IV.C. (As Appendix E indicates, further guidance on the use of these classes is provided in NUREG-0654, FEMA-Rep-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (November 1980)).

[13] Commission regulations designate two regions to be used for emergency planning purposes. One is the "plume exposure pathway emergency planning zone," or plume EPZ, which consists of an area with a radius of approximately 10 miles surrounding a nuclear power facility. The other is the "ingestion exposure pathway emergency planning zone," or ingestion EPZ, which is an area with a radius of approximately 50 miles surrounding the facility. 10 CFR 50.47(c)(2). As defined in the Commonwealth's emergency plan, "risk counties" are those that are located either partially or completely within the plume EPZ of a nuclear power facility. Commonwealth Ex. 2a, Annex E, Part III (Definitions), at 4 and Attachment 1 to Appendix 1, at p. 1-3. For the Three Mile Island reactors, those counties are Dauphin, York, Lancaster, Lebanon, and Cumberland.

[14] 14 NRC at 1519.

[15] At the hearing, the Aamodts sought to establish that all risk counties should be notified of any radioactive releases and that dedicated telephone lines should be provided for that purpose. App. Tr. 6-12. The Aamodts' appeal concerns only the means of initial notification, not the content or recipients of the notification.

Contrary to the Aamodts' assertion, the record does not suggest that busy telephone lines will interfere with initial notification.[17] More importantly, various backup communication systems are available and reliable. One alternate communication link in the event of telephone system failure is the National Warning System ("NAWAS"). NAWAS is a dedicated radio-telephone system designed to provide an immediate means of emergency information flow to PEMA. That system is tested daily. Another backup line is the Dauphin County cross-monitoring radio system, which is tested on a weekly basis. Rogan, *et al.*, fol. Tr. 13,756, at 62; Tr. 14,060-61 (Giangi).

There is no evidence demonstrating that radio communication links are likely to be overloaded. Indeed, NAWAS is a dedicated system, making it available solely for its intended use. The Aamodts argue, however, that licensee "failed to demonstrate conclusively that radio channels could not be overloaded." Aamodt Brief at 1. Of course, licensee generally bears the ultimate burden of proof. See 10 CFR 2.732. But intervenors must give some basis for further inquiry. *Cf. Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 NRC 317, 340 (1980). In this case, the Aamodts presented no evidence that even suggests that the radio channels linking TMI to Dauphin County or Dauphin to the other counties could become jammed or that amateur radio operators would refuse to clear radio frequencies for emergency use. Accordingly, we have been given no reason to doubt the reliability of available backup systems.[18]

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[16] Staff Brief (May 20, 1982) at 46-47; Licensee Reply Brief (May 10, 1982) at 134-35.

[17] The Aamodts rely on the testimony of licensee's witness Giangi to support their claim. In fact, Mr. Giangi neither acknowledged nor disputed Mr. Aamodt's assertion that the Dauphin County telephone lines would be "subject to busy signals which might occur if someone suspected beforehand that there was an accident going on." Tr. 14,123. Other testimony, however, was to the effect that in the early stages of an emergency, before notification of the public, use of commercial telephones should be adequate. Adler and Bath, fol. Tr. 18,975, at 6 (Testimony of Feb. 23, 1981); Curry, fol. Tr. 20,787, at 3.

[18] The Aamodts also argue that rapid escalation of emergency action levels is possible and that licensee's "step-by-step approach at notification could result in failure to notify counties in the event of rapid escalation of action levels," citing the testimony of licensee's witness Tsaggaris. Aamodt Brief at 1. Although Mr. Tsaggaris acknowledged it was "conceivable" that a failure to notify the risk counties could occur should the declaration of a general emergency immediately follow initial notification of a site emergency, he nevertheless considered it "highly unlikely." Tr. 14,114-16. Moreover, this possibility would exist regardless of the presence of the dedicated telephone lines the Aamodts urge as a solution.

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Dedicated telephone lines would undoubtedly provide additional redundancy in communications capability. The initial notification of state and local officials, however, was apparently not a problem during the TMI-2 accident, whatever other communications problems may have occurred.[19] Moreover, the record here indicates that it is not likely to be a problem should an accident occur at TMI-1 in the future. The Licensing Board concluded that licensee's provisions for initial notification and information transmittal are adequate, and we see no reason to disturb that determination.

II. PUBLIC EDUCATION

An important aspect of the Commission's emergency planning regulations is public education. Pursuant to 10 CFR 50.47(b)(7), licensees must periodically make information available to members of the public concerning how they will be notified and what their initial actions should be in an emergency. Provisions must be made for yearly dissemination of "basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency." 10 CFR Part 50, Appendix E, Section IV.D.2.

At the hearing below, the Aamodts challenged the adequacy of the public education program and materials for informing TMI area residents about protective measures for nuclear power plant emergencies. The Licensing Board reviewed licensee's and the Commonwealth's provisions for informing the public and found "reasonable assurance that the proper information is currently supplied or should soon be provided to the general resident population in the vicinity of TMI-1." LBP-81-59, *supra*, 14 NRC at 1525 (PID ¶1537).

On appeal, the Aamodts dispute this finding, pressing essentially the same arguments that they advanced below. Their main concern is that the public education materials introduced into the record provide inadequate or misleading information about the hazards of radiation. Aamodt Brief at 3-4. They also claim that the assignment of responsibility for public education to several public agencies and the licensee is insufficient and that there are no guidelines or criteria for evaluating public education programs. *Id.* at 4, 5. Both licensee and the staff reject the Aamodts' arguments as lacking evidentiary support.

At oral argument, the licensee's counsel informed us that the Commonwealth's public information pamphlet, entitled "What You Should Know About Nuclear

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[19] See Report of the President's Commission on the Accident at Three Mile Island (October 1979) at 120-122 (hereinafter referred to as the Kemeny Commission Report).

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Radiation Incidents,"[20] had been revised and that he would provide us and the parties with copies. App. Tr. 83 (Zahler). As a result of the revision, the issue of the acceptability of the original pamphlet has been rendered moot.

At our invitation, the Aamodts reviewed the revised pamphlet and pronounced it a "positive response to many of [their] concerns with the earlier version."[21] Indeed, they found the new brochure "essentially acceptable." Among other things, the analogy between radiation and sunlight contained in the original pamphlet that was the subject of so much argument below and in the briefs on appeal[22] has been deleted. It would appear, therefore, that as a direct result of the Aamodts' efforts a substantially improved product has been produced.

This improvement in the pamphlet implicitly renders moot other criticisms which, although not directed specifically to the content of the pamphlet, nevertheless had, as their ultimate objective, the rejection of the old pamphlet and the preparation of a better one before restart. Certain of the Aamodts' concerns, however, continue to warrant some additional comment on our part. We address them briefly.

To begin with, the Aamodts assert that there are no criteria or guidelines for judging the adequacy of public information programs. We disagree. The Commission's emergency planning regulations contain general standards governing the types of emergency preparedness information to be distributed to the public. See 10 CFR 50.47(b)(7) and 10 CFR Part 50, Appendix E, Section IV.D.2. In addition, NUREG-0654 (note 12, *supra*) provides guidelines in the form of evaluation criteria for licensee, state, and local public education programs. See NUREG-0654 at 49-51. While we fully recognize that these guidelines require particularization in light of local conditions and circumstances, they provide, in our judgment, a reasonable framework for evaluating the sufficiency of educational material.[23]

Second, the Aamodts claim that the assignment of responsibility for public education is inadequate. Because responsibility is shared among licensee, the Commonwealth and the five risk counties, the Aamodts assert that "accountability rests nowhere." Aamodt Brief at 4. In their view, the failure to designate one entity in charge of the program constitutes inappropriate management. App. Tr. 17-18; Aamodt Brief at 4.

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[20] Commonwealth Ex. 3.

[21] Aamodt Comments Concerning New Information Provided by the Licensee and Staff in Response to the Appeal Board's Order, June 29, 1982 (August 6, 1982) at 1.

[22] Aamodt Brief at 2, 3, 4-5; Licensee Reply Brief at 137-38; Staff Reply Brief at 51-53.

[23] The Aamodts rely on the testimony of licensee's witness Rogan in support of their argument that no criteria are available. Aamodt Brief at 4. But that witness did not testify that no criteria are available. Rather, Mr. Rogan stated that the NRC has established minimum guidelines and that he was unaware of any criteria for judging excellence in public education programs. Tr. 14,134-35 (Rogan).

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We disagree. The testimony of Mr. Rogan, on which the Aamodts rely, does acknowledge that responsibility for the public education program is shared rather than assigned to a single corporate or governmental entity. Tr. 14,131-32. The witness does not suggest, however, that no one is accountable for the overall program. To the contrary, responsibility for developing, implementing and maintaining discrete aspects of the public education program is assigned to designated personnel in the emergency plans of the licensee (Licensee Ex. 30, Appendix B), the Commonwealth (Commonwealth Ex. 2a, Appendix 15), and the risk counties (see generally PID ¶1546-1557 and Board Exs. 5-9). All plans have been reviewed and approved by the Licensing Board to ensure coordination. Importantly, the record does not suggest that shared responsibility is inherently defective or results in a lack of coordination. Rather, the recent revision and distribution of public information materials suggests that shared responsibility is, indeed, workable. See pp. 1272-73, *supra*. As a consequence, we see no basis for upsetting the Licensing Board's determinations.

The Aamodts also argue that several specific instances of lack of candor remain in the new pamphlet to render it inadequate. Again, we must disagree. We doubt that unanimous agreement on every sentence of every brochure could ever be obtained. Such agreement is not required.[24] Educational material must be judged in its entirety. We have examined the revised brochure and, in our view, it is fully adequate.[25]

Finally, we share the Aamodts' sense of frustration that while the licensee, the Commonwealth, and the staff were vigorously defending the earlier version of the PEMA pamphlet in this proceeding, the Commonwealth was at work incorporating the Aamodts' suggestions into a revised brochure. It seems obvious that the Aamodts' criticisms have contributed significantly to a better public information pamphlet. Indeed, it appears that an opportunity for comment from the general public or efforts toward compromise might have eliminated the need to litigate this issue. We do not suggest that responsibility for the preparation of educational documents should be transferred or that members of the public should be given a veto right over particular documents. We nonetheless urge the licensee and the government agencies involved to develop ways of improving the revision process to include public comments and suggestions as additional changes are considered.

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[24] One item is illustrative in this regard. One sentence of the brochure reads: "Radiation doses of about 350,000 millirems in a short period can cause illness or even death if no medical care is received." The Aamodts argue that illness or death may occur whether or not medical care is received and urge excision of the phrase "if no medical care is received." In our view, readers will not be misled into believing that medical treatment will, in all circumstances, be successful; such a guarantee cannot be offered in any medical emergency. Retention of the phrase, however, explicitly highlights the need for medical attention and will, in our judgment, encourage individuals to seek such attention promptly.

[25] In addition, the Aamodts urge that the Licensing Board erred in denying the Commonwealth's request that distribution of public information brochures be withheld until all revisions desired by the Commonwealth are made. Aamodt Brief at 5. To the extent that the Aamodts would have us withhold distribution of public information materials so that even further changes can be included, we have determined that no further revision is required.

III. EMERGENCY PLANS FOR FARMERS

The Aamodts participated in the litigation of a number of contentions regarding the adequacy of the Commonwealth's emergency plan for farmers. The Licensing Board reviewed the Commonwealth's plan in detail and found it adequate to protect the public health and safety. LBP-81-59, *supra*, 14 NRC at 1671-80 (PID ¶¶1919-1940). The Board noted, however, that better agricultural response plans should be devised. *Id.* at 1680 (PID ¶1940).

On appeal, the Aamodts argue that the Licensing Board erred in its findings, failing to appreciate the "central issue: the farmers' personal health and safety." Aamodt Brief at 1a. They maintain that the Board ignored evidence that the relationship between farmers and their livestock is so binding that farmers would remain with their animals during a general evacuation. They also claim that the Commonwealth's plan for the protection of livestock is unworkable and provides inadequate protection for farmers. Specifically, the Aamodts criticize the plan's recommendations concerning sheltering, limited care of livestock, and evacuation. In essence, they urge that, unless a better plan is devised for the protection and care of livestock, the health and safety of the farm population cannot be assured. Licensee and the staff reject that position. Although we agree with both the Licensing Board and the Aamodts that provisions for the care of livestock could be improved, we are fully convinced of the correctness of the Board's overall conclusion that the plan is adequate to protect the farmers. Accordingly, we affirm the Board's decision but make specific recommendations for improvement.

The Commission's emergency planning regulations are directed to the protection of the public health and safety. They require that a range of protective actions be developed for emergency workers and the public within the plume EPZ, and that protective actions appropriate to the locale be developed for the ingestion EPZ. 10 CFR 50.47(b)(10). See note 13, *supra*. Protective actions in agricultural areas necessarily will involve some consideration of farm animals and crops in order to provide adequate protection for the food ingestion pathway, as required by 10 CFR 50.47(c)(2). Nevertheless, the basic regulatory approach is directed to protecting the health and safety of the public in general. There are no provisions specifically addressing any special needs of farmers that may arise because of their concern for their livestock. In short, the regulations do not require any protective measures for livestock unless they are necessary to protect the farmers.

In contrast, the Commonwealth's plan goes beyond the regulatory requirements and devotes considerable attention to the special needs of farmers. In addition to the 38-page Department of Agriculture Plan for Nuclear Power Generating Station Incidents, there is also a 22-page Annex to that Plan. See Commonwealth Ex. 2a,

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Appendix 7 and Annex B. The Plan provides general information on protective actions for farmers and contains detailed recommendations for food protection and the care of livestock.

In common with the general public, farmers are advised to remain indoors or evacuate the area, depending on the circumstances. They can also rely on dosimetry to monitor radiation dosage and can protect themselves to some extent through the use of potassium iodide. Commonwealth Ex. 2a, Appendix 7, at 15-17; see also pp. 1277-78, *infra*. Concerning food protection, the plan indicates that, in some instances, dairy cattle can be sheltered and given stored feed. Surface contamination of fruits and vegetables can be removed by washing and peeling. There are also specific instructions with regard to the use of various kinds of packaged and/or stored foods. Contaminated milk and foodstuffs will be confiscated, if necessary. Commonwealth Ex. 2a, Appendix 7, at 20-30.

With respect to the sheltering of livestock, the Commonwealth plan advises farmers on the relative effectiveness of various types of commonly available shelters for livestock. Information is provided on means of augmenting those shelters, priorities for sheltering livestock, space and ventilation requirements, and means of providing protected feed and water. Specific instructions are given for various kinds of livestock. Commonwealth Ex. 2a, Appendix 7, Annex B

In the event of a general emergency, farmers would have to choose one of three options depending on the circumstances: (1) evacuate the area and abandon their animals; (2) evacuate the area but return periodically to provide limited care for their animals; or (3) remain on the farm to care for their animals. The Aamodts criticize each of these options as unworkable.

Concerning the option of evacuation, the Aamodts argue that farmers would refuse to leave their animals. Their assertion overstates the record. The testimony of farmers, veterinarians, and a county agricultural agent suggests that, although farmers would plainly be reluctant to abandon their animals, they would not generally refuse to evacuate if circumstances were to make such action necessary.[26] At oral argument, Mr. Aamodt candidly acknowledged that, in the event of a very serious emergency, farmers would have to abandon their animals. He also conceded that absolute protection of livestock need not be guaranteed as a condition of restart. See App. Tr. 28-31. Rather, the Aamodts' position, as we understand it, is that emergency plans must reflect reasonable efforts to ensure protec-

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[26] The Aamodts rely on the opinions of two veterinarians and a county agricultural agent who testified that, in most instances, farmers would remain with their animals. Smith, fol. Tr. 21,243, at 3; Tr. 18,769, 18,775-76 (Samples); Tr. 18,787 (Weber). They also cite the testimony of two farmers. One stated that he did not evacuate during the TMI-2 accident. V. Fisher, fol. Tr. 18,749. Another testified generally that he would not abandon his cows. Lytle, fol. Tr. 18,749. But none of the farmers who testified indicated that he would not evacuate in the event of a genuine need to do so. Two testified that they would decide what to do based on the situation at hand and the availability of means to care for their livestock. Tr. 18,728 (Lytle); Tr. 18,730 (V. Fisher). A third indicated that he would definitely evacuate in the event of an accident. Tr. 18,702-706 (J. Fisher).

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tion for livestock and those farmers who choose to remain with them during less serious radiological emergencies.

The Aamodts argue that the plan's provisions for sheltering of livestock are inadequate. Aamodt Brief at 5-6. They cite one farmer's testimony that it would be impractical to shelter and provide water for his entire herd of cattle in accordance with the Commonwealth's suggestions. Tr. 18,695, 18,738-39 (Lytle). They also rely on the testimony of one of the Commonwealth's agricultural agents, who stated that not all farms in the TMI area have sufficiently modern facilities to allow farmers to leave their herds unattended for a few days. Tr. 18,326-29 (Van Buskirk).

The Licensing Board recognized, as do we, that some of the Commonwealth's recommendations may not be practical for all farms in the TMI area.[27] Indeed, we acknowledge that the Commonwealth's plan does not guarantee absolute protection for livestock in all circumstances. Nor is it required to do so. See p. 1275, *supra*. The Licensing Board nonetheless concluded that the plan's guidance should enable farmers to provide some form of sheltering protection for at least a portion of their livestock in a radiological emergency. LBP-81-59, *supra*, 14 NRC at 1675-76 (PID ¶1927). In this regard, the testimony of Commonwealth witness Van Buskirk (an agricultural agent) and Aamodt witness Fisher (a farmer) indicates that some sheltering is possible for many animals in the EPZ. Tr. 18,328-30 (Van Buskirk); 18,713, 18,716 (J. Fisher). Most barns have water piped in from a protected source, as long as electric power is available. Tr. 18,809 (Samples); 18,327-28 (Van Buskirk). Several witnesses stated that cattle would survive for at least three days without water and two weeks without food. Tr. 18,719 (Lytle); 18,720 (V. Fisher); 18,720-21 (J. Fisher); 18,307 (Cable). Thus, the sheltering option does provide a measure of protection for at least some of the livestock in the TMI area.

The Licensing Board also found that farmers could evacuate the area and then contact their county agricultural agent for assistance in caring for their animals during the period of general evacuation. See LBP-81-59, *supra*, 14 NRC at 1676-77 (PID ¶¶1928-29). The Aamodts criticize the Licensing Board's reliance on the testimony of witness Furrer of the Pennsylvania Department of Agriculture, who indicated that the Department can supply 57 officers, most of whom are farmers, to provide assistance in an emergency. Tr. 18,850-51, 18,853. We agree that the availability of sufficient agricultural personnel to care for livestock in a radiological emergency is, at best, questionable. There has been no advance planning to arrange for the care of abandoned livestock. Assistance will be provided based on the particular circumstances of the emergency and may involve

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[27] Specifically, the Board cited the testimony of Mr. Lytle (Tr. 18,738), mentioned above, and Dr. Samples, who expressed concern that the plan's recommendation to reduce ventilation to a minimum could, if followed, cause cattle to develop respiratory problems and decrease their milk production. Tr. 18,766-67 (Samples).

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the county agricultural emergency boards and the U.S. Department of Agriculture as well as the Pennsylvania Department of Agriculture. Tr. 18,302-304 (Cable). The extent of assistance that can or will be provided is uncertain, making this aspect of the proposal unreliable.[28]

The second option is that of limited care, which permits farmers to return periodically to provide care for their livestock during a general evacuation. This is closely related to the third option, that of remaining on the farm. The Aamodts argue that, in either case, farmers will clearly be placed at risk unless they are supplied with protective measures such as potassium iodide, dosimetry, and protective clothing. Aamodt Brief at 9. As the Licensing Board pointed out, the Commonwealth now intends to treat farmers with livestock as "emergency workers" requiring dosimetry and potassium iodide.[29] The Commonwealth and county emergency plans will be modified prior to restart in order to provide for distribution of dosimeters and potassium iodide. LBP-81-59, *supra*, 14 NRC at 1675 n.214. This greatly improves the safety and feasibility of allowing farmers to remain with or return to their livestock in the event of a general evacuation.

The Aamodts' final criticism concerns public information for farmers. They argue that public information pamphlets intended for the general public are not suitable for farmers and their families because they contain no information explicitly directed to the needs of farmers and their families. Aamodt Brief at 11-12. The Licensing Board examined the PEMA pamphlet and county brochures and concluded that they were appropriate for farmers. The Board also approved the Commonwealth's other means of conveying emergency information to farmers, as explained below. See LBP-81-59, *supra*, 14 NRC at 1677 (PID ¶1932).

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[28] The Licensing Board also found that farmers could accomplish a limited evacuation of livestock. See LBP-81-59, *supra*, 14 NRC at 1676 n.217. The Aamodts assert that the unplanned evacuation of cattle would be impossible to accomplish. Aamodt Brief at 9-11. We agree. There is no dispute that a general evacuation of livestock would not be feasible. LBP-81-59, *supra*, 14 NRC at 1676 n.217; see Tr. 18,822-23 (Weber); Tr. 18,805-06 (Samples); Adler and Bath, fol. Tr. 18,975, at 50 (Testimony of March 16, 1981). The Commonwealth plan characterizes it as not only disruptive of human evacuation but dangerous to the animals' health as well. Commonwealth Ex. 2a, Appendix 7, at 17.

Concerning a more limited evacuation of livestock, there is some record support for the Board's conclusion Individual farmers may move all or some of their animals without prior permission from the state unless their herds have been quarantined. Tr. 18,314 (Van Buskirk). Commercial livestock haulers are available in the area, and many farmers have small trucks that can be used to move a small number of their most valuable animals. Tr. 20,234 (Steward); Tr. 18,737 (Lytle). The Aamodts do not dispute the facts; rather, they urge that a limited evacuation of livestock would be insufficient and that the Board erred in viewing it as a genuine option. We concur in that assessment. There has been no advance planning for the movement of livestock, nor has there been any assessment of how many animals could be moved safely.

[29] The Aamodts allege that these measures are insufficient because supplies fall far short of those needed. Aamodt Brief at 7. The record is silent on this point. The Commonwealth's plan is to predistribute to the county level supplies adequate to equip one emergency worker per farm. See LBP-81-59, *supra*, 14 NRC at 1675 n.214.

So far as we can determine, the Aamodts raised the issue of protective clothing for the first time on appeal. It is not clear what sort of clothing they are referring to. Ordinary coveralls are generally available and would provide a measure of protection; accordingly, we have suggested that farmers be so advised in the Commonwealth's instructional materials. See note 31, *infra*.

The PEMA pamphlet contains general information that would be of assistance to farmers. Like other local residents, farmers can protect themselves by remaining indoors during times of greatest risk in an emergency. State milk sanitarians will contact dairy farmers about the possible contamination of milk. See pp. 1281-82, *infra*. Emergency broadcast system messages will also be employed. Adler and Bath, fol. Tr. 18,975, at 50 (Testimony of March 16, 1981). In addition, the Commonwealth has committed to prepare and distribute an agricultural information brochure to farmers with livestock in the 10-mile plume EPZ. A final version of the brochure is anticipated to be available by the end of this month.[30] We fully expect that the Commonwealth will accomplish the prompt distribution of these materials.

We are concerned, however, that neither the PEMA pamphlet nor the Commonwealth's Department of Agriculture plan contains specific instructions on self-protection for those farmers who remain on the farm or return to care for their livestock.[31] The Commonwealth's plan to provide farmers with dosimetry and potassium iodide is a definite improvement in this area.[32] We strongly recommend that protective information specific to farmers be developed and distributed. We also urge that the agricultural brochures be distributed to all farmers throughout the 50-mile ingestion EPZ. See p. 1282, *infra*.

It is clear that, as the Aamodts contend, the options available to farmers offer only a partial solution for the protection and care of livestock. The degree of protection available will depend on the circumstances and severity of the emergency. Despite a number of deficiencies in its plan, however, the Commonwealth has made a reasonable effort to insure protection for farmers that is consistent with the requirements of the Commission's emergency planning regulations. There is reasonable assurance of adequate protective measures for the health and safety of farmers. Guidance and options offering some protection of livestock are also available. Thus, we agree with the Licensing Board's conclusion that, although the safety of livestock cannot be guaranteed, the Commonwealth's emergency plan for farmers is adequate.

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[30] The Commonwealth originally committed to distribute pages from the Agricultural Extension Service Disaster Handbook to farmers with livestock in the 10-mile plume EPZ in the form of "fact sheets," which set forth guidance for the protection of livestock and foodstuffs grown on the farm. Tr. 20,421-22 (Furrer). The Commonwealth reiterated this commitment in its July 13, 1982 reply to our order of June 29, 1982. Then, on September 22, 1982, the Commonwealth informed us that substantial revisions in the text and format of the Handbook made it no longer suitable for most farmers, necessitating the preparation of an agricultural information brochure. Copies will be distributed to us and the parties as soon as they are available. See letter of September 22, 1982 from Robert W. Adler, Assistant Counsel for the Commonwealth, to members of the TMI-1 Appeal Boards for emergency planning issues.

[31] The Commonwealth's Department of Agriculture Plan contains a brief section on protective measures for farmers. Commonwealth Ex. 2a, Appendix 7, Section V, at 15-17. It describes the available options (evacuation, sheltering, and thyroid prophylaxis) and instructs farmers to contact their county agent for advice and assistance. Farmers could be reminded of the obvious use of a weather vane to determine the best time to tend to their livestock (*i.e.*, when the wind is blowing radioactive fallout away from the farm). They could also be told to wear protective clothing and use wet cloths as a means of respiratory protection.

[32] For a discussion of the role of dosimetry in protecting all emergency workers, including farmers, see our companion opinion, ALAB-698, 16 NRC at 1290, 1294-1301 (1982).

As the foregoing discussion makes clear, we do not think it necessary to impose our suggestions as a condition for restart. We nevertheless hope that the Commonwealth will adopt our recommendations in its continuing efforts to improve its emergency plan for farmers and livestock. As in the case of educational materials, we believe that the solicitation of comments and suggestions from affected members of the public, *i.e.*, farmers, is likely to result in a substantially improved product.

IV. INGESTION EXPOSURE PATHWAY

The ingestion EPZ is an area of about 50 miles in radius surrounding a nuclear plant. See note 13, *supra*. Its exact size and configuration are determined "in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries." 10 CFR 50.47(c)(2). Protective actions that are appropriate to the locale must be developed for the ingestion exposure pathway EPZ. 10 CFR 50.47(b)(10).

In Contention EP-11, the Environmental Coalition on Nuclear Power (ECNP), an intervenor below, challenged the Commonwealth's protective action guide for ingestion (based on a projected dose to an infant from milk) as providing inadequate protection to the fetus. ECNP presented the testimony of Dr. Bruce Molholt, a microbiologist, in support of this contention. Fol. Tr. 19,690. Because ECNP filed no proposed findings and was therefore in default on this issue,[33] the Licensing Board discussed the contention "only briefly in order to clarify its thrust . . . and to give the bases for its rejection." LBP-81-59, *supra*, 14 NRC at 1591 (PID ¶1713).

As part of their appeal of the Licensing Board's decision on emergency plans for farmers, the Aamodts rely on Dr. Molholt's testimony to raise several issues regarding the adequacy of protective measures for the ingestion exposure pathway. Only one of these issues relates particularly to farmers; the others are of more general concern. Briefly, the Aamodts argue that the Board erred in (1) failing to determine the ingestion exposure pathway EPZ; (2) finding that farmers who consume milk from their own cows will be adequately protected; (3) rejecting the proposal that the thyroids of small field rodents be used to measure radioactive iodine in the environment; and (4) finding that increased rates of neonatal hypothyroidism and infant mortality were not indicative of the Commonwealth's failure to detect radioactive iodine following the TMI-2 accident. Aamodt Brief at 13-18. The staff and licensee maintain that the Licensing Board's decision on these matters is correct and that the Aamodt's allegations are not supported by the record.

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[33] See 10 CFR 2.754 and the Licensing Board's Order of May 22, 1980 at 12.

The Aamodts' appeal raises some potentially serious questions that are undoubtedly matters of concern to TMI area residents. For this reason, we have reviewed the record with particular care in reaching our conclusion that the Licensing Board correctly decided these issues in connection with its disposition of Contention EP-11.

A. Determination of the Ingestion EPZ

The Aamodts argue that the Licensing Board failed to determine the ingestion exposure pathway EPZ, as required by Commission regulations. But the Board found that an ingestion exposure pathway EPZ of about 50 miles in radius had been developed and defined for TMI, as set forth in the Commonwealth's emergency plan. LBP-81-59, *supra*, 14 NRC at 1555 (PID ¶1610). No party contested the adequacy of the TMI-1 ingestion exposure pathway EPZ. Accordingly, the Licensing Board was not required to make more specific findings concerning its exact size and configuration.

B. Protection of Farmers from Contaminated Milk

The Aamodts assert that the Licensing Board erred in finding the Commonwealth's procedures for detecting contaminated milk adequate to protect farmers who consume milk from their own cows. They rely on the testimony of Commonwealth witness Reilly that the extent of contamination in milk at individual farms can vary considerably and that the Commonwealth makes its recommendations regarding milk consumption based on the amount of contamination found at the dairy processor. The time required to transport milk to the dairy would allow some radioactive iodine to decay, and the fact that milk is commingled for processing would result in the dilution of some contaminated sources. Thus, milk at the dairy would be less contaminated than that found at some farms. Tr. 18,220, 18,225 (Reilly). See also Tr. 20,546-47 (Peterson). For this reason, the Aamodts believe that a farm family whose sole source of milk is its own herd may face an unacceptable health risk.

Milk sampling is performed by regional milk sanitarians under the direction of the Commonwealth's Department of Agriculture. Initial sampling for contaminated milk takes place at individual farms. Samples are analyzed by the Commonwealth's Department of Environmental Resources laboratory or a laboratory chosen by that Department. Commonwealth Ex. 2a, Appendix 7, at

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36-37. Regional milk sanitarians will contact dairy farmers directly to provide information on the possible contamination of milk. Tr. 20,407, 20,417-18 (Fouse). If dangerous levels of radioactivity were found, farmers in the neighboring area would also be so informed. Tr. 18,226 (Reilly).[34] These provisions make it likely that, if dangerous levels of contamination are detected at individual farms, farmers will be so advised.

It is reasonable to expect that farmers will be aware of the need for caution with regard to potentially contaminated livestock and produce. The Commonwealth's public information pamphlet recommends certain precautions for the use of food and beverages that should alert farmers to the possibility of radiological contamination. In addition, the Commonwealth has committed to distribute its agricultural brochures concerning protective actions for livestock and food to farmers with livestock herds in the 10-mile plume exposure EPZ. See p. 1279, *supra*. In view of the importance of these brochures, we shall require their distribution to *all* farmers in the 10-mile EPZ.

We conclude that the Commonwealth's planning is adequate to protect farmers who consume milk from their own cows. To provide further assurance that farmers are fully aware of the steps they should take to protect themselves, their families, and the public from ingestion of contaminated milk and foodstuffs, we strongly recommend that the agricultural brochures be distributed to all farmers throughout the remainder of the 50-mile ingestion EPZ as well.

C. Use of Vole Thyroids for Environmental Monitoring

As part of his testimony on behalf of intervenor ECNP, Dr. Molholt asserted that the thyroid glands of voles (which are small field rodents) provide a more sensitive means of detecting radioiodine in the environment than does milk sampling, and that the Commonwealth should therefore be required to use them for that purpose. Molholt, fol. Tr. 19,690, at 14; Tr. 20,033 (Molholt). The Licensing Board considered this assertion and rejected it because there is currently no means of projecting human doses from a measured amount of vole thyroid contamination.[35]

The Aamodts maintain that the Licensing Board erred in its finding. They argue that vole thyroids provide a more sensitive and reliable measure than milk sampling, and offer the advantage of an integrated monitor for both ingestion and inhalation exposures. Aamodt Brief at 15-16. We agree with the Licensing Board's decision, as explained below.

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[34] Although the Aamodts claim this means of notification is inadequate to reach the many farms in the 50-mile ingestion EPZ, they cite no evidence in support of that assertion. Our review of the record reveals nothing to suggest that such is the case.

[35] See LBP-81-59, *supra*, 14 NRC at 1593 (PID ¶1717).

In considering the Aamodts' arguments, it is important to appreciate the difference between detecting the presence of radioiodine in the environment, on the one hand, and determining actual or projected doses to humans, on the other. Commonwealth witness Reilly acknowledged that, although vole thyroids are a good indicator of the environmental presence of radioactive iodine, they are less reliable than milk samples for evaluating radiation doses to humans. Tr. 18,191-93 (Reilly). Moreover, the transfer factors from air and food to the vole thyroid are unknown. Tr. 19,947-48 (Molholt). Thus, it is currently impossible to convert a measured vole thyroid dose to an estimated dose for humans. In contrast to voles, milk is part of the ingestion pathway to humans. Tr. 19,946, 19,841 (Molholt); Tr. 18,241-42 (Reilly). Assuming that vole thyroids provide a better means of detecting the presence of radioiodine, milk sampling is clearly superior for determining the existence of a human health hazard. Thus, the Licensing Board's refusal to require the use of vole thyroids as an environmental monitor for radioiodine was entirely correct.

D. Infant Mortality and Neonatal Hypothyroidism After the TMI-2 Accident

Finally, the Aamodts argue that the Board erred in failing to consider evidence of increased rates of neonatal hypothyroidism[36] and infant mortality[37] as proof of the Commonwealth's inadequate monitoring of radioiodine following the TMI-2 accident. They rely on Dr. Molholt's testimony that the incidence of such cases increased significantly after the TMI-2 accident. Molholt, fol. Tr. 19,690, at 13. The Licensing Board found Dr. Molholt's analysis unconvincing because (1) the spatial distribution of cases of neonatal hypothyroidism was inconsistent with radioiodine releases from TMI-2, (2) only low levels of radioiodine were found in the environment following the accident, and (3) the Commonwealth's direct evidence demonstrated that the majority of cases of infant mortality and neonatal hypothyroidism are attributable to causes unrelated to the accident. LBP-81-59, *supra*, 14 NRC at 1593-95 (PID ¶¶1719-21).

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[36] Neonatal hypothyroidism is a deficiency of thyroid gland activity in newborns that results in a lowered metabolic rate. It can impair skeletal development and result in mental retardation and eventual death, if not treated. See Molholt, fol. Tr. 19,690, at 12.

[37] Infant mortality is generally defined as death of an infant within the first year after birth. See Tr. 19,892 (Molholt).

We agree with the Licensing Board's assessment. To facilitate our discussion, we have reproduced Dr. Molholt's Table I below.[38] Dr. Molholt claimed that there was a statistically significant increase in neonatal hypothyroidism in an area he termed "downwind" of TMI-2 in the nine months after the accident, as compared to the nine months before. Molholt, fol. Tr. 19,690, at 13. He grouped the data in six categories, some of which overlap. For (1) the entire Commonwealth of Pennsylvania, (2) the area of Pennsylvania west of Harrisburg, (3) the five-county area near Philadelphia and (4) the downstream area (Lancaster County), there was either no increase or an increase that is not statistically significant. For the area Dr. Molholt designates (5) "downwind of TMI," and (6) the "rest of Pennsylvania" (after separating out the areas west of Harrisburg and near Philadelphia), there was a statistically significant increase. See note 38, *supra*.

At the outset, it should be recognized that there is considerable uncertainty concerning Dr. Molholt's definition of "downwind." For the first 48 hours after the accident, when the largest radioactive releases most likely occurred, the wind prevailed in a sector between north and northwest; *i.e.*, to the north-northwest. Tokuhata, fol. Tr. 20,097, at 3-4.[39] It continued to prevail in that direction for about the first week after the accident, from March 28, 1979 to April 3, 1979. Tr. 19,929-30 (Molholt). There were no cases of neonatal hypothyroidism to the north-northwest after the accident. Tokuhata, fol. Tr. 20,097, at 3-4. See Molholt, fol. Tr. 19,690, at 22, Figure 4. Then, from April 3 to April 14, 1979, the wind prevailed to the northeast. Tr. 19,929-30 (Molholt). Dr. Molholt combined the two time periods from March 28 to April 3 and from April 3 to April 14 in order to obtain his northeasterly definition of downwind. *Id.*[40] Dauphin is the county closest to TMI-2 in either the northwesterly or the northeasterly direction. There

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[38] Molholt, fol. Tr. 19,690, at 23.

Table 1
NEONATAL HYPOTHYROIDISM
During the nine months before and after the accident

	[Number of Cases]	
Geographic Area	**Before**	**After**
Pennsylvania west of Harrisburg	7	7
Five county area of Philadelphia	6	6
Rest of Pennsylvania	4	14*
Total	17	27
Downwind TMI (Dauphin, Lebanon, Berks, Schuylkill, Lehigh, Carbon)	2	8*
Downstream TMI (Lancaster County)	2	6

*Difference significant at $p < 0.05$.

[39] See also the Kemeny Commission Report, note 19, *supra*, at 110-157 (radiation detected in offsite areas to the west and northwest during the first two days of the accident).

[40] Other data indicate that, during the first month after the accident the wind was, in fact, multidirectional and prevailed to the southeast over one-third of the time. Tr. 19,990-91 (Molholt).

were no cases of neonatal hypothyroidism in Dauphin County in the nine months after the accident. Molholt, fol. Tr. 19,690, at 22 (Figure 4). Dr. Molholt's statistically significant cases of neonatal hypothyroidism occurred, for the most part, in the more distant counties to the northeast.[41]

Dr. Molholt hypothesized that this could have resulted from the radioactive plume skipping nearby areas and touching down farther away from the reactor. Tr. 19,877-78. Although "skipping" or "looping" of a plume from high stacks has been noted under certain unstable weather conditions (usually occurring between noon and 2 p.m. under clear skies) no such skipping occurs for low release plumes such as those from reactor buildings or filters.[42] Therefore, we cannot accept that explanation in this case. Furthermore, Dr. Molholt knew of no plume touchdown or radioiodine measurements to support his hypothesis. *Id.* In addition, it is inconsistent with the environmental sampling data on which Dr. Molholt relied in reaching his conclusions about the use of vole thyroids as an environmental monitor for radioiodine. That is, the concentration of radioiodine found in vole thyroids decreased as a function of distance from the TMI-2 reactor. Tr. 20,037-38 (Molholt).[43] Finally, it is inconsistent with the amount of iodine estimated to have been released and the levels of radioiodine actually found in the environment after the TMI-2 accident. See p. 1286, *infra*.

Dr. Molholt also testified that, in the nine months following the TMI-2 accident, there were ten times the number of cases of neonatal hypothyroidism in Lancaster County than would be expected based on the nationwide incidence of such cases. Molholt, fol. Tr. 19,690. But the increased incidence of such cases was not statistically significant in comparison with those that occurred in the nine months before the accident. See note 38, *supra*. More importantly, Dr. Molholt knew of no evidence to support his hypothesis that these Lancaster County cases downstream from TMI-2 were caused by radioiodine released directly into the Susquehanna River. Tr. 19,880, 19,883. He also did not possess important information about the mothers of the hypothyroid infants born in Lancaster County hospitals — for example, whether the mothers actually lived in the county, drank water from the Susquehanna River, and remained in the county during or after the TMI-2 accident. Tr. 19,992-93. Dr. Molholt acknowledged that the limitations of the data are severe and that he was only able to suggest "a potential, a plausible causal linkage" between the TMI-2 accident and the subsequent increase in health effects. Tr. 20,053. At one point, he stated his "honest suspicion" that the increased rates of neonatal hypothyroidism in Lancaster County in 1979 and in 1980 were not attributable to the TMI-2 accident but were caused by "another source of iodine-131 insult." Tr. 20,019.

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[41] As mentioned previously (p. 1284, *supra*), Dr. Molholt identified two categories of statistically significant increases in neonatal hypothyroidism: (1) downwind of TMI, and (2) the "rest of Pennsylvania." It should be noted, however, that the "rest of Pennsylvania" category is nothing more than the sum of those cases contained in the "downwind" and "downstream" categories. That is, it includes the downstream Lancaster County cases as part of a statistically significant group. Taken alone, the Lancaster County cases are not statistically significant. Thus, there is in reality only one statistically significant category, that "downwind of TMI." Obviously, the grouping of these cases has a great deal of influence on the significance of the data. See Molholt, fol. Tr. 19,690, at 22, Figure 4.

With regard to the geographical distribution of cases, we note that three of the eight cases counted in the "downwind of TMI" category after the TMI-2 accident occurred in Lehigh County, which is entirely beyond the 50-mile radius of the reactor. A fourth case that occurred in Berks County also appears to be outside the 50-mile radius. *Id.*

[42] A full discussion of plume "looping" can be found in the U.S. Atomic Energy Commission publication "Meteorology and Atomic Energy," TID-24190, Section 2-7.2, at 56-61 (1968). A discussion of plumes from rounded buildings such as reactor structures may be found in Sections 5-5.2.2.3 through 5-5.2.2.5, at 227-232.

[43] Dr. Molholt did caution that the number of locations from which vole thyroids were obtained was too small to draw accurate conclusions about radioiodine dispersal. He acknowledged, however, that the vole thyroid data were inconsistent with the locations of increased incidence of neonatal hypothyroidism. Tr. 20,037-38 (Molholt).

In addition to these problems with Dr. Molholt's analysis, we note the Licensing Board's finding that the increases in neonatal hypothyroidism and infant mortality were inconsistent with the amount of iodine estimated to have been released and "the levels of radioiodine found in the environment after the accident." LBP-81-59, *supra*, 14 NRC at 1594 (PID ¶1720). Extensive monitoring of air, milk, and water following the TMI-2 accident was conducted by Pennsylvania's Bureau of Radiation Protection, the NRC, the Department of Energy, and the Environmental Protection Agency. These monitoring efforts revealed only low levels of radioiodine. *Id.*; Tr. 18,154, 18,189-90, 18,194-95 (Reilly). The Licensing Board further found that there had been no evidence presented to cast doubt on either the estimated releases or the monitoring results. 14 NRC at 1594 (PID ¶1720). Significantly, the Aamodts filed no exceptions to the Board's findings. Nor do they challenge the evidence upon which the Board relied, except insofar as they argue that Dr. Molholt's infant and animal data are "highly suggestive" of the Commonwealth's failure to detect radioiodine following the TMI-2 accident. Aamodt Brief at 18.

Dr. George Tokuhata, a member of the Hypothyroidism Epidemiological Investigating Committee formed by the Pennsylvania Department of Health, testified for the Commonwealth. He endorsed the Committee's conclusion that, based on "metabolic screening and diagnostic data compiled by the Pennsylvania Department of Health, there is no evidence to indicate that the incidence of neonatal hypothyroidism has been affected by the TMI nuclear accident." Tokuhata, fol. Tr. 20,097, at 1. He explained that the Commonwealth began its screening program for various types of neonatal hypothyroidism in July 1978 and, initially, screening procedures and standards were not fully established. Thus, the data for 1978 were limited and incomplete and should not be used as a basis for comparison. *Id.* at 2. Moreover, the overall rate of neonatal hypothyroidism for 1978, which Dr. Molholt used to evaluate the increase for 1979, was lower than normal.

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Id.; Tr. 20,015-17 (Molholt). The statewide incidence of neonatal hypothyroidism was within normal range for both 1979 and 1980. *Id.*

Using the Commonwealth's more complete data, the Committee analyzed in detail the seven neonatal hypothyroidism cases that occurred in Lancaster County in 1979. One occurred two months before the accident. One was born only three months after the accident with severe central nervous system abnormalities, most of which probably developed before the accident. Two were cases of displaced thyroid glands (one of which occurred in a pair of twins born to an Amish family), suggesting developmental anomalies not likely to be related to radiation exposure. Another was an Amish infant unable to synthesize thyroxine, a condition that is usually inherited. The final two did not receive thyroid scans, making their diagnostic status unknown. Based on these findings, the Committee concluded that "the apparent concentration of neonatal hypothyroidism in this particular location is not related to the TMI nuclear accident." Tokuhata, fol. Tr. 20,097, at 2-3; see also Tr. 20,118-19 (Tokuhata).

Dr. Tokuhata explained that Lancaster County is atypical because of its considerable Amish population, in which consanguinity is not uncommon and the incidence of genetic disorders is relatively high. Tokuhata, fol. Tr. 20,097, at 3. This is further supported by the fact that the rate of neonatal hypothyroidism in Lancaster County remained high during the first nine months of 1980. Tr. 20,018-19 (Molholt). Thus, we agree with the Licensing Board's finding that there is no basis in the record to conclude that any increased incidence of neonatal hypothyroidism during the last nine months of 1979 was caused by the TMI accident.

Dr. Molholt also identified a statistically significant increase in infant mortality within a ten-mile radius of TMI-2 following the accident. Molholt, fol. Tr. 19,690, at 13, 24 (Table 2). There was no statistically significant increase within a five-mile radius of the reactor. *Id.* at 24. Dr. Molholt derived his results from data for equivalent six-month periods (April through September) in 1977, 1978 and 1979. He took an average of the 1977 and 1978 data as the basis for comparison with the 1979 data. *Id.*; Tr. 20,023-24 (Molholt). He did not examine the individual cases to determine their cause, nor was he able to obtain other relevant information, such as whether the mothers evacuated during the TMI accident. Tr. 19,895, 20,021 (Molholt). Accordingly, he recognized that the statistics were not conclusive but rather, a point for "further investigation." Tr. 20,021 (Molholt).

As noted above, the Licensing Board found that the increased incidence of both neonatal hypothyroidism and infant mortality were not consistent with the low levels of radioiodine found in the environment after the accident, and the Aamodts have not appealed that finding. See p. 1286, *supra*. The Board also relied on Dr. Tokuhata's testimony that "a Pennsylvania Department of Health study of infant mortality concluded that there was no relationship between the TMI-2 accident and changes in infant mortality in the TMI area." LBP-81-59, *supra*, 14 NRC at 1595 (PID ¶1721), citing Tokuhata, fol. Tr. 20,097, at 6-7.

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Dr. Tokuhata testified that the infant mortality rate within a 10-mile radius of TMI (either including or excluding Harrisburg) was not significantly different from that in the rest of Pennsylvania for 1977, 1978 and 1979. Infant mortality within the 10-mile radius including Harrisburg was abnormally high during the first quarter of 1979 (*i.e.*, before the accident), and continued at that level during the second quarter. It declined substantially during the third and fourth quarters, which is inconsistent with the hypothesis that the TMI accident had a significant influence. In addition, the rate for 1978 was unusually low compared with both 1977 and 1979. Tokuhata, fol. Tr. 20,097, at 6-7. This testimony fully supports the Licensing Board's conclusion that any changes in infant mortality in 1979 were not attributable to the TMI-2 accident.

The Aamodts argue that the Licensing Board's reliance on Dr. Tokuhata's testimony was "gross error." Aamodt Brief at 18. They rely on the Board's reservations concerning Dr. Tokuhata's radiobiological expertise. See LBP-81-59, *supra*, 14 NRC at 1595 (PID ¶1722). Specifically, the Board found that "Dr. Tokuhata was unclear about how the fetal thyroid could be irradiated (Tr. 20,108), how radiation from I-131 might lead to dishormonogenesis[44] (Tr. 20,114-17), and the conditions by which radiation might be implicated in fetal mortality incidence in the Harrisburg black population. Tr. 20,131-32." *Id.*

We believe that the Licensing Board's criticism of Dr. Tokuhata's radiobiological expertise and understanding of genetics was unwarranted. Dr. Tokuhata's apparent difficulty in answering the above questions seems to have resulted from a misunderstanding of the intent of the questions rather than a lack of knowledge of the answers. Furthermore, Dr. Tokuhata is a recognized authority in epidemiology, a field that necessarily requires an understanding of the role of genetic and environmental factors in the incidence, distribution, and control of disease.[45] Thus, it was incongruous for the Licensing Board to regard Dr. Tokuhata as a fully qualified epidemiologist and to rely on his expert testimony while doubting his understanding of important aspects of his specialty. Although we reject the Licensing Board's analysis, we do not consider the three examples cited above sufficiently serious to support a finding that Dr. Tokuhata's expert testimony was unreliable. Accordingly, the Licensing Board did not err in relying on it.

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[44] Dishormonogenesis is the lack of a necessary enzyme resulting in an inability to synthesize thyroxine and/or difficulty in releasing thyroxine. It is usually inherited. Tokuhata, fol. Tr. 20,097, at 1.

[45] Dr. Tokuhata received the Doctor of Public Health degree in epidemiology and public health from Johns Hopkins University. He has served as Director of the Bureau of Health Research for the Pennsylvania Department of Health since 1975. He is also an adjunct professor of epidemiology and biostatistics at the Graduate School of Public Health, University of Pittsburgh, and Associate Professor of Community Medicine, Temple University College of Medicine. He has served on numerous public health committees and task forces and has authored over sixty published articles and reports concerning epidemiology and public health concerns. Tokuhata, fol. Tr. 20,097 (Curriculum Vitae); see also LBP-81-59, *supra*, 14 NRC at 1595 (PID ¶1722).

For all the foregoing reasons, the Licensing Board's decision is *affirmed* subject to the following condition:

Prior to restart, the Commonwealth's agricultural information brochure shall be distributed to all farmers in the 10-mile plume exposure EPZ.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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Cite as 16 NRC 1290 (1982) **ALAB-698**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Reginald L. Gotchy

In the Matter of **Docket No. 50-289-SP**
(Emergency Planning)

METROPOLITAN EDISON COMPANY
et al.
(Three Mile Island Nuclear
Station, Unit No. 1) **October 22, 1982**

In the second of its appellate decisions considering emergency planning issues in this special proceeding to determine whether Unit 1 of the facility should be permitted to resume operation, the Appeal Board affirms the Licensing Board's holding in LBP-81-59, 14 NRC 1211, 1455-1707 (1981) not to require the predistribution of thermoluminescent dosimeters (TLDs) to state and local emergency workers, reverses the Licensing Board's holding regarding the staffing of the Emergency Operations Facility (EOF), and adopts the licensee's plan on this matter subject to certain conditions. The Appeal Board also holds that a test of emergency support operations as a condition of restart is unnecessary, and concludes that the state of the licensee's onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of an emergency. The Appeal Board further reviews *sua sponte* the NRC staff's incident response plan and certain guidelines in the Commonwealth of Pennsylvania's plan regarding protective action, and makes various recommendations to the staff and to the Commission based on that review.

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EMERGENCY PLANS: CONTENT (ONSITE AND OFFSITE PREPAREDNESS)

The Commission's emergency planning regulations provide generally that no license may be issued unless a finding is made that the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

EMERGENCY PLANS: CONTENT (DOSIMETERS)

The distribution of appropriate dosimeters to emergency workers in conjunction with other protective measures may serve to comply with the requirements of the emergency planning regulations relating to the protection of emergency workers in a radiological emergency.

EMERGENCY PLANNING: GUIDANCE ISSUED BY FEMA

Documents such as the Federal Emergency Management Agency (FEMA) findings and determinations, NUREG-0654 and FEMA REP-2, somewhat like the staff's Regulatory Guides, do not rise to the level of regulatory requirements. Neither do they constitute the only method of meeting applicable regulatory requirements. *Cf. Fire Protection for Operating Nuclear Power Plants (10 CFR 50.48)*, CLI-81-11, 13 NRC 778, 782 n.2 (1981); *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 772-773 (1977).

REGULATORY GUIDES: APPLICATION

In the absence of other evidence, adherence to regulatory guidance may be sufficient to demonstrate compliance with regulatory requirements. *Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 406-407 (1978). Generally speaking, however, such guidance is treated simply as evidence of legitimate means for complying with regulatory requirements, and the staff is required to demonstrate the validity of its guidance if it is called into question during the course of litigation. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), CLI-74-40, 8 AEC 809, 811 (1974).

EMERGENCY PLANS: CONTENT (EMERGENCY OPERATIONS FACILITIES)

Commission regulations, 10 CFR 50.47 and 10 CFR Part 50 Appendix E, require the establishment of two separate facilities — one onsite, the other offsite — for the management of accidents. Licensees must provide for "timely augmentation of response capabilities" and specify "the interfaces among various onsite response activities and offsite support and response activities." 10 CFR 50.47(b)(2). The Emergency Operation Facility (EOF) is expressly referred to as the place where licensees must accommodate state and local emergency response staff. 10 CFR 50.47(b)(3).

EMERGENCY PLANS: CONTENT (PROTECTIVE MEASURES)

There is no express emergency planning regulation governing the location from which protective action recommendations must be made.

EMERGENCY PLANS: CONTENT

The precise means of implementing the Commission's emergency planning regulations require a high degree of judgment. The mere fact that a licensee's approach is somewhat different from the staff guidance does not render it impermissible or necessarily inconsistent with the need to provide adequate protection for the public.

TECHNICAL ISSUES DISCUSSED:

Dosimetry;
Thermoluminescent dosimeters;
Emergency Operations Facilities;
Emergency Support Operations;
Emergency Response Plans.

APPEARANCES

Mr. Robert E. Zahler, Washington, D.C. (with whom **George F. Trowbridge, Thomas A. Baxter,** and **Delissa A. Ridgway,** were on the brief), for the licensee.

Mr. Robert W. Adler, Harrisburg, Pennsylvania (with whom **Michele Straube**, was on the brief), for the Commonwealth of Pennsylvania.

Mr. Joseph R. Gray (with whom **James M. Cutchin, IV**, **Jack R. Goldberg** and **Mary E. Wagner**, were on the brief), for the Nuclear Regulatory Commission staff.

DECISION

This decision, together with a companion decision issued today, examines various aspects of the emergency response plan for the Three Mile Island Nuclear Station. At issue in these particular appeals are (1) the Commonwealth of Pennsylvania's claim that the Licensing Board erred in failing to order the distribution of permanent record thermoluminescent dosimeters (TLDs) to state and local emergency workers prior to the restart of Unit 1 of the Three Mile Island Nuclear Station, and (2) the licensee's claim that the Board improperly required that an Emergency Support Director, with full authority to make protective action recommendations, be available within one hour after the declaration of a site emergency. These two issues are among only a handful of matters regarding emergency planning that were not resolved to the satisfaction of all the parties by the Licensing Board in that portion of its partial initial decision devoted to emergency planning. LBP-81-59, 14 NRC 1211, 1455-1707 (1981) (PID ¶¶1330-2011). A brief review of emergency planning issues, along with a more general discussion of the overall background of this case, is contained in the companion opinion issued today. See ALAB-697, 16 NRC 1265, 1267-72 (1982).

The NRC staff supports the Licensing Board's disposition of both issues. The licensee and Commonwealth oppose each other's appeal. For the reasons discussed below, we affirm the Board's decision not to require the predistribution of permanent record dosimeters, but modify its decision regarding the Emergency Support Director. We also address two matters considered by the Licensing Board[1] but not raised on appeal. One is the relationship and coordination between the licensee's emergency response plan and those of the Commission itself, the Commonwealth, and the Federal Emergency Management Administration (FEMA). The other is the weight to be given certain testimony concerning the quantity of fission products likely to be released in an accident and possible implications for the Commonwealth's choice of protective actions.

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[1] See 14 NRC at 1489-1490, 1669.

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I. DISTRIBUTION OF DOSIMETERS

The Commission's emergency planning regulations provide generally that no license may be issued unless a finding is made that the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. They require, more specifically, that (1) a range of protective actions be developed for emergency workers operating in the plume exposure pathway emergency planning zone (plume EPZ),[2] (2) means for controlling radiological exposure to emergency workers be established which are consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides (PAGs),[3] and (3) equipment be available at the site for personnel monitoring.[4] The licensee, the Commonwealth, and local governments plan to comply with these requirements through, among other things, the distribution of dosimeters.

Dosimeters are devices used to determine the radiological dose received by an individual. Dosimetry is the method used to determine the cumulative exposure a worker has received at any time, "specifically for purposes of advising the worker to leave the plume exposure pathway emergency planning zone ('plume exposure EPZ') once a predetermined level of exposure has been reached."[5] Another function of dosimetry, the Commonwealth suggested at oral argument —

> is to establish an accurate, reliable, permanent record of the dosage accumulated by each individual emergency worker. This is critical in terms of medical records and in terms of receiving medical treatment following the emergency . . .[6]

There are no explicit regulatory requirements that mandate use of dosimeters. Thus, there are no formal regulations regarding the number or type of dosimeters to be distributed, or when they should be distributed. But NUREG-0654[7] recommends that each emergency organization — *i.e.*, licensee, state, and various local governments — provide its own emergency workers with both self-reading and permanent record dosimeters (such as TLDs).[8] The licensee has complied with this recommendation. The state and local governments will provide two self-reading dosimeters to each emergency worker and all parties agree that there are adequate supplies of these dosimeters available.[9] One dosimeter, model CDV-730, has a range of 0 to 20 roentgen (R) but cannot be read below 0.4 R; the other, model CDV-742, has a range of 0 to 200 R but cannot be read below 4 R. Together, they provide for coverage ranging from 0.4 to 200 R and overlapping coverage between 4 R and 20 R. As explained below, emergency workers are instructed to leave the area when either of their self-reading dosimeters reaches the 15-20 R range.

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[2] 10 CFR 50.47(b)(10). The plume exposure EPZ is the geographic area surrounding the plant in which the risk of whole body and inhalation exposure to radioactivity would be greatest in the event of an accident. Ordinarily, the plume exposure EPZ is about 10 miles in all directions but its exact size and configuration may change depending on demography, topography, or local emergency response needs and capabilities. 10 CFR 50.47(c)(2).

[3] 10 CFR 50.47(b)(11).

[4] 10 CFR 50.47(b)(8), (9) and 10 CFR Part 50, Appendix E, Section IV.E.1.

[5] Commonwealth Brief at 5 (March 10, 1982). See also Commonwealth Ex. 2a, Appendix 16, Section V.B. Commonwealth Ex. 2a is the state emergency plan for nuclear facility incidents.

[6] App. Tr. 44-45.

[7] NUREG-0654, FEMA-REP-1, Rev-1, is the current version of a document entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," prepared jointly in 1980 by the NRC staff and FEMA. It is incorporated by reference into Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Rev. No. 2 (October 1981), and is designed to provide guidance and criteria for the development of radiological emergency plans. NUREG-0654 is included in the record as Staff Ex. 7.

There are insufficient supplies of TLDs currently available to supply all state and local offsite emergency workers. The state and local governments could, of course, bring themselves easily into full accord with NUREG-0654 by buying or leasing TLDs for their workers. However, they are unwilling or unable to do so. Counsel for the Commonwealth at oral argument indicated that the state government did not appropriate money to obtain TLDs.[10] The Commonwealth nonetheless argues that distribution of TLDs prior to an actual accident (*i.e.*, predistribution) is essential to the safety and protection of emergency workers, and urges us to require predistribution as a condition of restart. Presumably, such a requirement would place some pressure on the licensee or the Federal government to provide the funds to obtain dosimeters for state and local emergency workers.

The issue before us on appeal is whether predistribution of TLDs is necessary to insure compliance with Commission regulations or to provide adequate protection of emergency workers. The Commonwealth asked the Licensing Board to find either that predistribution of TLDs was required by regulation or that there was some reasonable assurance of satisfactory alternative means of radiation monitoring. The Board did not directly address this issue except with respect to agricultural workers in York County. There, it took note of the York County plan to provide agricultural workers with both self-reading dosimeters and TLDs and found that the emergency plan was adequate despite the existing shortage of TLDs. 14 NRC at 1678-79. It declined to require the predistribution of TLDs as the Commonwealth had requested.

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[8] A self-reading dosimeter contains an encapsulated air chamber and a moveable fiber. The dosimeter is electrically charged initially, which displaces the fiber. When the dosimeter is exposed to ionizing radiation, charge is removed and the fiber moves toward its original position. Movement of the fiber is proportional to the radiation dose. The dosimeter is read by looking through a lens at one end at the fiber superimposed on a scale of radiation exposure.

TLDs contain a crystalline material, most often lithium fluoride, that absorbs and stores energy when exposed to ionizing radiation. To measure the radiation dose, the material is heated and the stored energy is released as visible light. The amount of light released is proportional to the radiation dose.

[9] In fact, during the time between the June 2 and the August 29, 1981 radiological emergency exercises, those dosimeters were distributed to the level of local emergency response organizations. Tr. 22,385-87; Staff Exs. 21 and 24a.

[10] App. Tr. 46. It appears that the "shortage" may be at least partially attributable to FEMA's recommendation (with which the Commonwealth agrees) to predistribute TLDs, instead of stockpiling them at a central location to supply all nuclear plants in the state in the event of an emergency, as called for in the Commonwealth's original plan. See Staff Ex. 21, Section K, at 20.

The thrust of the Commonwealth's argument on appeal, as we understand it, is twofold; first, it argues that permanent record dosimetry for each emergency worker in the TMI-1 plume EPZ is required by the NRC's emergency planning regulations, at least as those regulations are construed by relevant interpretive guidelines. Second, it contends that, even if not required by the regulations, there is no reliable evidence to demonstrate that any alternative means of radiological exposure control for emergency workers can and will be implemented. We disagree with the Commonwealth and therefore affirm the Board's result.[11]

A. Regulatory Requirements

As a threshold matter, we reiterate that the Commission's emergency planning regulations do not specify that any particular type of dosimetry be provided. The Commonwealth, however, relies on three interpretive documents to support its argument that the Licensing Board should have directed the predistribution of TLDs to state and local emergency workers.

First, it relies on the "findings and determinations" made by the Federal Emergency Management Agency. FEMA is the federal agency with the lead responsibility for offsite nuclear emergency planning and response.[12] The Commission's rules provide that FEMA findings constitute a rebuttable presumption on the issue of the adequacy of state and local emergency plans.[13] FEMA issued its findings and determinations for TMI on June 16, 1981; following a test on August 29, 1981 involving York County, FEMA issued a supplemental report.[14] It found (Staff Ex. 21):

> (1) "[T]here [are] insufficient quantities of needed equipment on hand to allow for predistribution where it is recommended and planned for. . . .

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[11] In its proposed findings to the Licensing Board the Commonwealth asked only that "[t]o the extent that sufficient supplies of permanent record dosimetry have not been predistributed, state and county plans include other means to provide reasonable assurance that the health and safety of emergency workers will be protected." It repeats that request in terms on brief to us. See Commonwealth Brief at 17-18. Its exception to the Licensing Board's decision, however, asserts that the Board erred as a matter of law "in not concluding that adequate supplies of permanent record dosimeters are required to be predistributed to the TMI-1 risk counties prior to TMI-1 restart . . ." See Commonwealth Brief at 4. Its brief is directed principally to the issue of predistribution of dosimeters, not "other means" to assure reasonable protection of emergency workers. Moreover, at oral argument Commonwealth counsel urged us to find that TLDs are required. App. Tr. 46.

[12] FEMA was established pursuant to Reorganization Plan No. 3 of 1978, and activated April 1, 1979 by Executive Order 12127, 44 *Fed. Reg.* 19367 (April 3, 1979). It was given responsibility for emergency planning in connection with nuclear power plant accidents by Executive Order 12241, 45 *Fed. Reg.* 64879 (Sept. 29, 1980).

[13] 10 CFR 50.47(a)(2). See generally 14 NRC at 1460-1466.

[14] Staff Ex. 21, June 16, 1981; Staff Ex. 24a, Sept. 18, 1981.

> There are insufficient thermoluminescen[t] dosimeters (TLD) for permanent record dosimetry of emergency workers. [The Pennsylvania Emergency Management Agency (PEMA)] is in the process of securing them." (Section H, at H-1).
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> (2) "The state plan" requires that "Each emergency worker is supposed to be issued two self-reading and 1 TLD dosimeter (total of three)." Distribution of dosimeters would not begin until after an accident occurred (from Fort Indiantown Gap), and logistics problems may prevent distribution of TLDs within the three hours called for in the state plan. (Section K, at K-1).
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> (3) Predistribution of these state stocked items is not considered because statewide, with other plants operating in the state, a much larger quantity of this equipment would be required. "Regardless, FEMA feels most strongly that dosimetry equipment should be predistributed (most importantly TLDs and CDV 730s) to at least the emergency worker organization level, state and local, site-specific to each operating plant." (Section K, at K-1).

Second, the Commonwealth relies on NUREG-0654.[15] That document indicates, in part, that each emergency response organization — licensee, state, and local — shall provide for "24-hour-per-day capability" to determine the radiological doses received by emergency workers. Each organization is to provide for the distribution of dosimetry, "both self reading and permanent record devices," and to ensure that "dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers involved in any nuclear accident." NUREG-0654, note 7, *supra*, Part II, Section K, at 67.

Finally, the Commonwealth points to FEMA-REP-2.[16] This guidance, which was published subsequent to the interim version of NUREG-0654 and just before the current version, discusses some of the technical bases for the distribution of self-reading dosimeters and TLDs and the advantages and disadvantages of each. This guidance, however, would not mandate the use of both types of dosimeters. At one point, FEMA-REP-2 states:

> Direct reading personnel dosimetry that accurately measures whole-body gamma radiation dose below the minimum detectable level of the 0-20 roentgen direct reading pocket ionization chamber (*i.e.*, about 400 mR) is not considered essential for emergency workers such as police,

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[15] See note 7, *supra*.

[16] "Guidance on Offsite Emergency Radiation Measurement Systems, Phase 1 — Airborne Release" (September 1980). Although FEMA-REP-2 was not itself introduced into evidence, it is listed as a reference document in Appendix 16 of the Commonwealth's Emergency Plan. Commonwealth Ex. 2a, at 16-1. It is also relied on in the Commonwealth's brief. See Commonwealth Brief at 11.

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> firemen, etc., who are not likely to ever be involved in another abnormal exposure to radiation.
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> In view of the above, it is recommended that all local emergency workers be equipped with two direct reading gamma dosimeters; one with a range of 0 to 20 R and one with a range of 0 to 200 R. These two dosimeters should provide for continuous coverage from 0.4 to 200 R which is well beyond any anticipated whole-body gamma exposure. They will also provide some redundancy by their overlapping ranges (0.4 to 20 R and 4.0 to 200 R). To offset the disadvantages of the direct reading dosimeter, all emergency workers *could* be provided with a thermoluminescent dosimeter as well as the two direct reading dosimeters. This dosimeter would also measure whole-body gamma radiation dose for the dual purpose of (1) providing a *redundant* measurement of the accrued dose, and (2) providing a measurement of the accrued dose of less than as well as in excess of the range of the direct reading dosimetry (0.4 to 200 R).

FEMA-REP-2, at 5-8 through 5-9 (emphasis added). Elsewhere it states that a thermoluminescent dosimeter

> should be provided for each emergency worker. It is highly desirable that this be incorporated as part of the exposure record documentation.

Id. at 7-5.

The Licensing Board ruled that whatever presumptive weight the FEMA findings and determinations are required to be given under Commission regulations dissolved during the course of the hearings in light of the evidence actually introduced. It did not accord the FEMA findings and determinations any weight beyond that to which the testimony would be entitled by virtue of the expertise of the witnesses and the bases presented for their views. 14 NRC at 1460-1466. It also concluded that NUREG-0654 should be treated as regulatory guidance rather than a legally binding regulation. *Id.* at 1460. Parties in this case were permitted to demonstrate that compliance with NUREG-0654 was either not necessary or not sufficient and the Licensing Board essentially reached its overall conclusions on the basis of the evidentiary record, of which both the FEMA determinations and NUREG-0654 were simply a part. Significantly, no party objected to the Board's rulings in this regard.[17]

We agree that documents such as the FEMA findings and determinations, NUREG-0654, and FEMA-REP-2, somewhat like the Regulatory Guides, do not rise to the level of regulatory requirements. Neither do they constitute the only method of meeting applicable regulatory requirements. *Cf. Fire Protection for Operating Nuclear Power Plants (10 CFR 50.48)*, CLI-81-11, 13 NRC 778, 782 n.2 (1981); *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 772-773 (1977). In the absence of other evidence, adherence to regulatory guidance may be sufficient to demonstrate compliance with regulatory requirements. *Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 406-407 (1978). Generally speaking, however, such guidance is treated simply as evidence of legitimate means for complying with regulatory requirements, and the staff is required to demonstrate the validity of its guidance if it is called into question during the course of litigation. *Vermont Yankee Nuclear Power Corp*. Vermont Yankee Nuclear Power Station), CLI-74-40, 8 AEC 809, 811 (1974). As we explained in *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-644, 13 NRC 903, 937 (1981):

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[17] We note that Regulatory Guide 1.101, *supra*, note 7, incorporates and endorses the use of NUREG-0654 as a means of complying with the standards of 10 CFR 50.47. In addition, the interim version of NUREG-0654 is actually referred to in a footnote in 10 CFR 50.47(b). The Commonwealth does not argue, however, that this accords it any heightened importance. Commonwealth Brief at 9.

> The guides, advisory rather than obligatory, explain on their face that they "are issued to describe and make available to the public methods acceptable to the [NRC] Regulatory staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission." (footnote omitted).

Compliance with NUREG-0654, FEMA-REP-2, and the FEMA findings and determinations is thus not required by the Commission's emergency planning regulations.[18] This being so, whether TLDs are required depends ultimately on whether they are necessary to provide reasonable assurance that emergency workers will be protected.

B. Assurance of Adequate Protection

We believe that the distribution of the two self-reading dosimeters, under the specific instructions given to emergency workers in the emergency plans, is sufficient to assure reasonable protection for emergency workers. The Commonwealth's Emergency Plan provides:

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[18] The Commonwealth suggests that the Commission has nonetheless stated its intent to be guided by FEMA's judgment in NUREG-0654 as to how to implement the emergency regulations, citing the Commission's opinion in *Final Rule on Emergency Planning*, CLI-80-40, 12 NRC 636, 638 (1980). The Commission's statement in that opinion, however, was limited to FEMA's judgment as to times and systems feasible to implement the so-called "15-minute rule" contained in 10 CFR Part 50, Appendix E, Section IV.D.3.

> Each emergency worker is to be provided two self-reading dosimeters which will enable the worker to "read" at any time during the incident how much, if any, radiation he/she has received. Each emergency worker should read the dosimeters at least once each thirty minutes. The emergency worker protective action guide for whole body exposure used by BRP is 25 Rems; therefore an emergency worker should seek to be replaced or complete the assigned task and evacuate to a mass care center for personnel monitoring when either of the self-reading dosimeters indicates a total dose in the 15-20 R range.
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> Further, each emergency worker operating in the plume exposure pathway EPZ will be provided with a TLD (Thermoluminescent dosimeter) . . . which will allow *precise* measurement of radiation exposure at some time after the exposure has been incurred.[19]

The plans for each county provide that each emergency worker will be provided with a "Dosimetry Report Form" which each worker will complete during the course of his or her duties. Each worker enters the reading from the self-reading dosimeters before and after the mission to obtain the total for the mission. By adding up the mission totals, he or she can also use the self-reading dosimeters to determine the overall dose accumulated. Workers and their supervisors are reminded to ensure that the doses received, in the aggregate, do not exceed 25 rem.[20] As is clear, primary reliance for worker protection during the emergency is placed on the self-reading dosimeters. TLDs are intended essentially as record-keeping devices for use after the emergency is over and as a more precise but redundant measure of radiation exposure.[21] Reliance on self-reading dosimeters is sufficient, in our view, to assure that emergency workers will be adequately protected and that a reasonable method, other than the use of TLDs, exists for measuring the worker's accumulated exposure to radiation. In this connection, we note that the FEMA witnesses, although preferring predistribution of TLDs, uniformly testified that the shortage of TLDs did not render the offsite emergency response plans inadequate.[22]

We recognize that permanent record dosimeters have a special value in one situation where self-reading dosimeters would not be sufficient — *i.e.*, where emergency workers receive unexpected or unplanned life-threatening radiation exposures beyond the 200 roentgen range of the self-reading dosimeters. There is

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[19] Commonwealth Ex. 2a, Appendix 16, at 16-6 to 16-7.

[20] See, *e.g.*, Board Ex. 5, York County Emergency Plan, Annex R, Appendix 3, at 10.

[21] TLDs cannot be read by the workers themselves; they must be returned to a central location where special reading devices are available.

[22] Tr. 22,687 (Dickey); Tr. 22,765 (V. Adler). See also Tr. 22,476-78 (Bath). The issue of the need for permanent record dosimeters arose during the course of the hearing when FEMA submitted its findings and determinations. The issue therefore was not subject to the normal process of discovery, nor was it dealt with in great detail in prefiled direct testimony.

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no testimony regarding the possibility of large unexpected releases of radioactivity during emergency missions. FEMA-REP-2, however, suggests that offsite releases likely to result in whole body gamma exposure in excess of 200 R are unlikely. More importantly, the Commonwealth's emergency plan instructs emergency workers to report to a medical facility for radiological assessment and possible decontamination and treatment whenever their dosimetry indicates an exposure of 25 R or more.[23] Therefore, any emergency worker whose accumulated exposure might exceed 200 R would likely be hospitalized and provided with all the available diagnostic tests to determine his or her precise needs, regardless of whether there is a TLD record of actual dose. While TLDs might serve as a useful diagnostic aid, we do not find that the absence of TLDs is likely to compromise the safety of emergency workers.

C. Improvement in the Emergency Plan

We agree fully with the Commonwealth and FEMA that permanent record dosimeters nonetheless represent a useful added measure of protection for emergency workers. They clearly would facilitate more accurate permanent recordkeeping, as well as diagnosis in special cases. Under the recommendations contained in NUREG-0654, the Commonwealth and the local governments should provide TLDs for their emergency workers.[24] Although we do not believe that predistribution of TLDs should be a condition for restart, we urge all affected interests to work together to make reasonable provision for distribution of TLDs for offsite emergency workers in the event of an emergency.

II. LICENSEE'S EMERGENCY STAFFING AND FUNCTIONS[25]

A. Background

The Emergency Operations Facility (EOF) is the command center for the licensee's overall management of offsite activities during an emergency and is under the direction of the Emergency Support Director. It is located about half a mile from the plant. Importantly, it is the principal location for contact with the NRC staff and state and local officials.

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[23] People who require medical treatment for radiation injury will manifest certain observable symptoms, such as nausea and vomiting, within a few hours after exposure, followed by clinically observable depression of certain white blood cells. See generally V. P. Bond, *et al.*, *Mammalian Radiation Lethality* (1965); A. P. Casarett, *Radiation Biology* (1968); U.S. NRC, WASH-1400, "Reactor Safety Study," Appendix VI, Chapter 9 and Appendix F (1975).

[24] There is some discrepancy over how many TLDs are actually required. A PEMA letter attached to the Commonwealth's brief indicates a need for 11,184 TLDs for the entire state to cover four nuclear power stations. The Commonwealth appears to suggest that approximately 9,000 TLDs are needed for TMI alone. App. Tr. 105

[25] Mr. Edles dissents in part from the conclusion reached in Part II. See pp. 1319-23, *infra*.

The licensee originally proposed to have the facility fully functional and under the direction of its designated Emergency Support Director within six hours after declaration of a site emergency. It has designated several corporate officers from its New Jersey headquarters, including the GPU Nuclear Corporation president and certain of its vice presidents, to act as candidates for Emergency Support Director. But, toward the end of the hearings, it agreed to have six members of its TMI organization available to activate the facility within an hour and have all communications and data links operational within that time.[26]

The licensee nonetheless wants the responsibility for making the important and politically sensitive protective action recommendations to the Commonwealth of Pennsylvania in the hands of only its most senior officials. As a consequence, it objects to assigning interim responsibility for protective action recommendations to one of the six employees who will be stationed in the EOF. It has now committed, however, to having its Emergency Support Director at the EOF within four hours. During the interim period, decisional responsibility for protective action recommendations would be in the hands of the Emergency Director, who is the company's senior onsite official and is stationed in the control room.[27] The licensee argues that its organizational plan is fully sufficient to comply with Commission requirements and assure adequate protection for the public. Indeed, it contends that its approach is highly desirable since protective action recommendations will be made at all times by the company's senior official at the site and will be based on up-to-the-minute information obtained directly from the control room.

At the urging of the staff and the Commonwealth, the Licensing Board rejected this aspect of the emergency plan and ordered that an individual qualified to serve as Emergency Support Director assume management responsibility at the EOF, including responsibility for protective action recommendations, within an hour.[28] The staff is concerned about the potential for confusion if too many responsibilities reside within the control room during the early hours of an emergency. The Commonwealth emphasizes the need for it to obtain accurate and up-to-the-minute information and argues that face-to-face contact with licensee officials in the EOF will help it obtain important information underlying the licensee's protective action recommendations. The Licensing Board was concerned over the apparent lack of a single manager for the EOF and believed that the absence of the Emergency Support Director for a four-hour rather than a one-hour period ran afoul of the provisions of NUREG-0654, NUREG-0696,[29] and the emergency planning rule that the EOF be fully staffed and operable within an hour of declaration of a site emergency. 14 NRC at 1478. Although recognizing the rationale behind the licensee's approach, the Board was plainly troubled by what it perceived as "the extent of the implied reliance of the Licensee during emergency conditions on persons located so far from the site. . . ." 14 NRC at 1479. The Board explained that, in the final analysis, the licensee had the burden of proving the workability and adequacy of its proposal and that, on balance, it had failed to meet that burden. 14 NRC at 1477-1478.

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[26] See Licensee Ex. 30 at 4-7; Licensee Ex. 58.

[27] See Licensee Ex. 30 at 5-8.

[28] 14 NRC at 1470-1479, 1705.

[29] Functional Criteria for Emergency Response Facilities. Draft Report for Interim Use and Comment (July 1980). NUREG-0696 is included in the record as Staff Ex. 8.

The licensee appeals from this aspect of the Board's decision. Its exception claims:

> The decision by the Licensing Board that certain of the functions of the Emergency Support Director, which initially are assumed by the onsite Emergency Director, be transferred within one hour after declaration of a site emergency to an individual located in the near-site Emergency Operations Facility is not supported by reliable, substantial and probative evidence, is based upon an erroneous legal analysis of the regulatory requirements for plant staffing during an emergency, and inappropriately disregards internal management decisions properly vested with licensee.[30]

Equally important, the licensee has proposed modifications to its plan. Most importantly, it has assigned managerial responsibility for the EOF to the Assistant Emergency Support Director until the Emergency Support Director arrives. The principal remaining difference between the licensee's proposal and the Board's requirements concerns which official will make protective action recommendations: the licensee prefers that it be the Emergency Director in the control room during the early hours after an accident, while the Board insists that it be the Emergency Support Director in the EOF.

We find, in general, that the more important problems that led to the Licensing Board's result have now been ameliorated. As to the one principal matter that has not been changed, we believe that the licensee's proposal, given the staffing situation at TMI, presents a more logical approach to the management of protective action recommendations than does that ordered by the Licensing Board. It also has the advantage of being an integral part of the licensee's overall management philosophy. For these reasons, we reverse the Board's decision and approve the licensee's proposal subject to certain conditions.

B. Analysis

The Commission's regulations, 10 CFR 50.47 and 10 CFR Part 50 Appendix E, set out in very general terms the basic requirements for the structure of an emergency response organization. The Commission requires the establishment of two separate facilities — one onsite, the other offsite — for the management of accidents. Licensees must provide for "timely augmentation of response capabilities" and specify "the interfaces among various onsite response activities and offsite support and response activities." 10 CFR 50.47(b)(2). The EOF is expressly referred to as the place where licensees must accommodate state and local emergency response staff. 10 CFR 50.47(b)(3). There is no express regulation, however, governing the location from which protective action recommendations must be made.

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[30] Licensee's Brief on Exceptions (March 10, 1982) at 45.

The precise means of implementing the Commission's emergency planning regulations require a high degree of judgment. The mere fact that the licensee's approach is somewhat different from the staff guidance does not, as we explained in Part I.A of this opinion, render it impermissible or necessarily inconsistent with the need to provide adequate protection for the public. See pp. 1298-99, *supra*. The Licensing Board arrived at its conclusion only "[a]fter prolonged deliberation, accompanied by [its] initial reluctance to overrule the personnel management judgment of the Licensee. . . ."[31]

We believe the Board was properly concerned with a fundamental aspect of the licensee's original plan — the apparent lack of supervision and coordination in the EOF and the potential for confusion in the control room during the four-hour period before the Emergency Support Director arrives from the corporate headquarters in New Jersey. Recently submitted information and clarifications made at oral argument convince us that the licensee's revised plan, with certain conditions, will now satisfy the Licensing Board's concern and adequately protect the public.

In response to our request, the licensee submitted on June 16, 1982, an affidavit (the "Rogan" affidavit) which clarifies various matters concerning administration of the EOF during the first four hours following declaration of a site emergency.[32] The affidavit makes clear that the Assistant Emergency Support Director (also called the Emergency Support Staff Member) would be responsible for activating the EOF and would be in charge of the facility until the permanent Emergency Support Director arrives. The Assistant Emergency Support Director would be the principal contact for NRC, state and local officials and would remain in contact with the Emergency Director. In other words, he would be in charge of the EOF and would carry out all of the duties of the Emergency Support Director except for making protective action recommendations.[33] The Commonwealth's fear that EOF operations would be "control by committee"[34] is thus no longer well founded. In our judgment, these modifications go a long way toward alleviating the concerns raised by the parties and the Licensing Board.

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[31] 14 NRC at 1479.

[32] Toward the end of the hearings, the licensee agreed to modify its emergency plan to reflect changes regarding activation of the EOF. See Licensee Ex. 58. The Rogan affidavit reflects those changes. Those changes, however, were not considered by the Licensing Board since they had not been completed at the time the record closed. The licensee seeks leave to file the affidavit in evidence. See Licensee's Response to Appeal Board Order of June 1, 1982 and motion for leave to file affidavit, June 16, 1982. No party objects. The request is granted.

We have fully considered the Licensing Board's judgment that the delay in the arrival of a qualified Emergency Support Director could also result in some confusion in the control room if too many responsibilities reside there. The licensee emphasizes, however, that it has stationed a sufficient number of experienced employees in or around the Emergency Control Center during the early hours of an accident, and has delegated key responsibilities to them, so that the Emergency Director will be able to devote an adequate portion of his time to consideration of protective action recommendations. The licensee's emergency plan calls for twenty people onshift at all times instead of the minimum shift complement of ten suggested by NUREG-0654.[35] The control room will not be crowded in an emergency because, as the staff witnesses recognized, certain members of the emergency team will be stationed in the Technical Support Center or the Operations Support Center.[36]

Equally important, responsibility is delegated in a way that permits the Emergency Director to exercise general oversight in all important emergency response areas without the task of personally administering the minute-by-minute response in any single area. The licensee has provided the Emergency Director with three principal assistants in the areas of plant operations (Operations Coordinator), technical and engineering support (Technical Support Center Coordinator), and radiological assessment (Radiological Assessment Coordinator), along with the Assistant Emergency Support Director responsible for supervising the EOF. The Operations Coordinator, for example, will be a licensed senior reactor operator (SRO) and will have primary responsibility for operating the plant in the control room — a responsibility that, at other facilities, might be assigned directly to the Emergency Director.[37] Similarly, the staff's witness recognized:

> [T]he fact [is] that the shift supervisor has at his disposal some senior radiological personnel who can practically completely let him concentrate more on operational matters. He has additional auxiliary operators who can take some of those responsibilities — for notification, for instance — allowing him more time to concentrate on operations matters for mitigating the accident.[38]

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[33] Tr. 14,767 (Rogan); Rogan Affidavit at 3-8.

[34] Commonwealth Reply Brief (May 10, 1982) at 18 n.4.

[35] Tr. 22,289-22,290 (Chesnut).

[36] Tr. 15,472-15,482 (Grimes and Chesnut).

[37] Licensee Ex. 30 at 5-10 and 5-11, and Tr. 22,935-22,953 (Chesnut).

[38] Tr. 22,291 (Chesnut).

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The witness characterized this delegation of responsibility among onsite staff as "one of the strong points of the emergency plan."[39] We shall expressly condition approval of the plan on the maintenance of the proposed onsite organization and, as so conditioned, we are satisfied that the Emergency Director will have ample time to make any necessary protective action recommendations until relieved of that responsibility.

We have also considered the Commonwealth's argument that the presence of the Emergency Support Director in the EOF is necessary if the Commonwealth is to be able to obtain important information underlying the licensee's protective action recommendations. The Commonwealth's Bureau of Radiation Protection (BRP) employs a nuclear engineer who is responsible for communicating with licensee personnel to determine the operational status of the plant and the bases for licensee's protective action recommendations. The Commonwealth hopes to dispatch the BRP nuclear engineer to the EOF for direct communication with the licensee's staff.[40] Counsel for the Commonwealth characterized this contact with the licensee as a "critical" and "overriding" factor in the Commonwealth's emergency planning.[41] The staff also views the coordination with offsite agencies as important and believes it should be available in the early hours of an accident.[42] We note, however, that the Region I response time is expected to be two and one-half to three and one-half hours depending on the time of day; *i.e.*, essentially the same response time as that of the Emergency Support Director. Tr. 15,091-92 (Chesnut).[43]

The Commonwealth's views reflect the opinion of its nuclear engineer, Mr. Dornsife, who participated in two emergency planning drills. For the first, he was stationed in the BRP headquarters in Harrisburg; for the second, he was stationed at the EOF, which was fully functional within half an hour with the Emergency Support Director in charge. He found the second situation clearly preferable. It is unclear, however, whether, or to what extent, the presence of the Emergency Support Director — as opposed to Mr. Dornsife's presence at the EOF, or other improvements reflecting lessons learned at the first drill — contributed to that result.[44] While Mr. Dornsife expressed a "gut feeling" that the availability of the Emergency Support Director was an important ingredient,[45] he recognized that the Emergency Director could have spoken to him by direct line if the Emergency

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[39] *Id.*

[40] Tr. 23,013-14, 23,035-36 (Dornsife).

[41] Tr. 22,982-83, 23,063 (R. Adler).

[42] Tr. 15,013 (Chesnut); Staff Brief (May 20, 1982) at 89.

[43] Region I is one of the five NRC regional offices. It is located in King of Prussia, Pennsylvania. See 10 CFR 1.3.

[44] See generally Tr. 23,013-23,036 (Dornsife).

[45] Tr. 23,028.

Support Director had not been there[46] and that even telephone communication with the BRP headquarters at the site would be sufficient to protect the public health and safety.[47] Indeed, the Commonwealth relies on telephone information in connection with the other nuclear power facilities in Pennsylvania.[48] In sum, the Commonwealth has not given us cause to believe that the absence of the Emergency Support Director will compromise its ability to obtain needed information.

In any event, we find that the licensee's current plan will substantially satisfy the Commonwealth's concerns. The Rogan affidavit now makes it clear that the BRP and other representatives at the EOF will have face-to-face contact with the Assistant Emergency Support Director (in the absence of the Emergency Support Director) and direct communication with the Emergency Director in the control room for consultation, if necessary. We fully appreciate that the Commonwealth would prefer face-to-face contact with the licensee's ultimate decisionmaker. However, the Emergency Support Director and Commonwealth officials in the EOF would be expected to rely on, or at least consult with, the control room personnel by telephone before making protective action recommendations or decisions. In such circumstances, we doubt that there is much practical difference between the proposals of the licensee and the Commonwealth as they have evolved.

One additional — yet important — consideration leads us ultimately to approve the licensee's plan. In its decision, the Licensing Board summarized the licensee's observation that two conflicting lessons were learned from the TMI-2 accident: first, attention must be given to stationing the person making protective action recommendations outside the control room so as to minimize the number of people and functions performed within the control room; second, attention should be given to stationing the person making protective action recommendations inside the control room so as to improve the timeliness of information and minimize the likelihood of error concerning plant operations or radioactive releases. 14 NRC at 1475-1476. In balancing these factors, the Licensing Board, relying on generalized staff guidance, ultimately favored having protective action recommendations made outside the control room in spite of staff testimony that knowledge of the present and future condition of the reactor is the most important consideration in making protective action recommendations. Tr. 15,034 (Grimes). We believe the best place to gain that knowledge during the early hours of an accident is the control room and certain staff testimony supports our view. Tr. 15,035, 15,040

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[46] Tr. 23,031.

[47] Tr. 23,032.

[48] Tr. 23,031-23,032 (Dornsife). Despite the Commonwealth's emphasis on the need for immediate face-to-face contact with the licensee's decisionmaker, the Commonwealth has not committed to send its nuclear engineer to the EOF within one hour (although it intends to get him there as soon as possible) and its BRP does not maintain 24-hour response coverage in case of an accident. Tr. 23,017-23,020 (Dornsife) and App. Tr. 90.

(Grimes and Chesnut). As pointed out earlier, we do not believe that the potential for confusion in the control room is significant in light of the special organizational structure established by this licensee. We do believe, however, that placing the responsibility for making protective action recommendations in the hands of a senior licensee official, and placing that official in the control room during the early hours of an emergency in order to minimize the potential for inaccurate information, is eminently sensible. In other words, on the specific record before us, we would balance the conflicting factors differently than the Licensing Board.

We cannot ignore that the Emergency Support Director remains a critical member of the emergency response team; indeed, upon his arrival, he assumes overall responsibility for the management of the offsite emergency response. We can appreciate the Licensing Board's desire to insure that the special talents, abilities, and experience that a senior corporate official is able to bring to the job of Emergency Support Director be available during the critical hours following onset of an accident. We must also recognize, however, that the experience, skill and judgment necessary to make the politically sensitive protective action recommendations that would be available from a senior GPU Nuclear official such as the company president or vice-president cannot be duplicated simply by artificially assigning the role of Emergency Support Director to another, more junior employee.

We nonetheless believe that the licensee must make some effort to have its Emergency Support Director at the site as early as possible. Toward this end, we shall require that the Emergency Support Director be notified upon declaration of any *Alert* and that he immediately begin preparations to arrive at the EOF as soon as practicable, but in no event later than four hours after declaration of a *Site Emergency*.[49] As so conditioned, we believe that the licensee's overall emergency organization — onsite and offsite — is adequate to permit effective decisionmaking without confusion. In such circumstances, we approve the licensee's approach.

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[49] An alert is declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of plant safety. A site emergency is declared when events are in progress or have occurred which involve actual or likely major failures of plant functions needed for the protection of the public. NUREG-0654, at 1-8 to 1-14. The EOF generally need not be activated until the site emergency stage. NUREG-0696, at 5. We fully appreciate that alerts rarely reach the site emergency stage at which actions to protect the public must be considered. Thus, there may be times when the Emergency Support Director arrives at the site only to discover that the emergency is over. In our judgment, such result is an inevitable outcome of the need to protect the public under the proposal recommended by the licensee. Our perusal of preliminary notifications of events or unusual occurrences to the NRC staff during the 18 month period ending June 30, 1982 shows that there were only eight alerts nationwide. In other words, they are sufficiently infrequent that our requirement should not be unduly disruptive to the ordinary corporate responsibilities of those individuals (Mr. Arnold or Mr. Clark) who are the licensee's principal choice for Emergency Support Director.

C. A Test of Emergency Support Operations

The licensee argues that the utility of its approach has been proven at more than a dozen drills and that deficiencies were corrected in light of experience.[50] Indeed, it was at the licensee's suggestion that the Commonwealth's nuclear engineer will now report to the EOF rather than remain at the BRP headquarters in Harrisburg.[51] The Commonwealth argues that during various drills the availability of the Emergency Support Director for face-to-face dealings with Commonwealth officials was essential to the proper functioning of the overall emergency effort.[52] As we noted earlier, it is not at all clear to us that the presence of the Emergency Support Director in the EOF was really critical. See pp. 1306-07, *supra*. Counsel for the Commonwealth at oral argument recognized that any definitive answer to whether the presence of the Emergency Support Director is truly critical would require another drill at which the Commonwealth's officials report to the EOF but the Emergency Support Director does not arrive until some time later.[53] Under this decision, the next test of the emergency response plan shall be done using the licensee's procedures in which the Emergency Support Director does not participate for the first four hours.

The development of the most effective emergency plan is an evolving and — importantly — cooperative process. On the basis of the current record, we find that the state of the licensee's onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of an emergency. As with previous exercises, we expect that tests under the licensee's plan will improve with practice but the first test should be carefully monitored to disclose any unexpected flaws in the licensee procedures. Obviously, this is a situation where a little more practical experience is worth far more than further adversary procedures.

Drs. Buck and Gotchy note at this point Mr. Edles' partial dissent from the decision to approve the licensee's plan for the issuance of protective action recommendations in the early hours of an emergency.

With all due respect, we believe Mr. Edles' requirement for a full emergency plan test prior to restart, under the licensee's plan of emergency operation, is unnecessary and could be counterproductive. In addition, we believe our colleague overemphasizes the Commonwealth's argument while ignoring other pertinent facts. We consider it essential to discuss these points.

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[50] Licensee's Brief at 58-60.

[51] Tr. 23,013,014 (Dornsife).

[52] Commonwealth Reply Brief at 11-17.

[53] App. Tr. 102. See generally App. Tr. 91-102.

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a. In present circumstances it appears that, if authorized to restart, TMI-1 could not begin operations prior to early 1983 largely because of steam generator repairs. The 1982 annual emergency plan exercise was held on August 11, 1982. Presumably, the exercise for 1983 will be held during mid-1983, possibly within three to four months after plant startup. While we would like to see an exercise as soon as practicable, we prefer to leave the timing of the 1983 Emergency Plan exercise to the discretion of the licensee, FEMA and the other parties. We are concerned that a special emergency plan test before startup may conflict with FEMA's 1983 schedule of emergency exercises, and could also delay restart by interrupting plant modifications, steam generator repair work, and startup preparations.[54] We again point out that major portions of the Plan have already been tested many times by the licensee.

In any case, we believe a single test should not be the final determinant. Our colleague has acknowledged (*e.g.*, p. 1322, *infra*) that lessons are learned from each successive test. Because we believe the licensee's plan has merit, the company should be given a chance to perfect its procedures as long as the first trial shows reasonable results.

b. While our colleague does not specifically mention it in his partial dissent, the Commonwealth's argument in support of the NRC staff's position (as ordered by the Licensing Board) appears to us to be based, to an inordinate degree, on the testimony of a single witness whose experience with emergency exercises at TMI represented only a small fraction of the licensee's cumulative experience. While we agree that face-to-face contact among the licensee, NRC, and Commonwealth and local authorities is desirable, we note once more that the face-to-face contact with the Emergency Support Director urged by the Commonwealth at TMI is, by its own admission, not now possible for other reactor sites in Pennsylvania. At the more distant sites, for at least a few hours, the Commonwealth must rely on telephone communication from licensees to its BRP headquarters. To a large extent, this would also be true for the NRC Region I emergency response efforts, because the geographic relationship between the Three Mile Island Program Office (TMIPO) and TMI-1 is a very special and temporary situation.[55] As we have seen (pp. 1306-07, *supra*), Commonwealth witness Dornsife testified that the telephone communication method adequately assures protection of the public health and safety at the more distant Pennsylvania reactors. No reason for this

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[54] The best time to have run such a special test, if required, would have been before the Licensing Board's initial decision on the subject. However, the Licensing Board, despite its ambivalence toward the staff and licensee plans, did not request such a demonstration by the licensee.

[55] The TMIPO was organized after the TMI-2 accident and serves as a place from which NRC personnel can direct Unit 2 cleanup, review licensee activities and procedures, and provide radiological and environmental information. It is located in offices on-site and in Middletown, Pennsylvania. See U.S. NRC, 1981 Annual Report at 42.

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differentiation between TMI and the other sites is put forward by the Commonwealth, NRC staff, or our colleague.

We believe it essential to the accuracy of the communication that the licensee's decision-maker give his recommendations using the Radiological Line to the BRP assessment center in Harrisburg.[56] If the BRP engineer is present in the EOF at the time (and the Commonwealth has given us no assurance that he will be), then he should be included in the conference call.[57]

III. OTHER EMERGENCY PLANNING CONCERNS

There remain two emergency planning matters of concern to us that were litigated to some extent below but not raised on appeal. They are the adequacy of the NRC staff's incident response plan and certain evidence bearing on the Commonwealth's use of the Environmental Protection Agency's Protective Action Guides. We address them here *sua sponte* in order to alert the Commission to the possible need for further consideration of these issues, and to direct the staff to complete its emergency response plans for TMI and remove present ambiguities in those plans.

A. The NRC Staff's Emergency Response Plan

While we find a well-developed record on the emergency plans of the licensee, the Commonwealth of Pennsylvania, the five risk counties and FEMA, very little information was provided on the staff's emergency response plan, in either the testimony or the initial decision. Because of this, on June 29, 1982 we issued an order requesting additional information from the NRC staff concerning the NRC incident response plan. The staff responded to our order on July 23, supplying the requested documents and current information.[58] After reviewing these documents and the staff's response, we find that there still remain areas of uncertainty about NRC incident response plans and how these plans are to be coordinated internally and with other emergency response plans (*i.e.*, those of licensee and the Commonwealth).

1. Concerning NUREG-0845, "Agency Procedures for the NRC Incident Response Plan," we note that the document is marked "For Interim Use and

[56] "The Radiological Line is a dedicated telephone line . . . [that] permits the communication of plant radiological dose projections, offsite radiation monitoring results and liquid effluent release data to BRP and other key emergency response personnel." Rogan, *et al.*, fol. Tr. 13,756, at 60-61.

[57] This is consistent with the licensee's Emergency Plan as modified by the Rogan Affidavit (at 7-8).

[58] We received the following documents: NUREG-0845, "Agency Procedures For the NRC Incident Response Plan," (March 1982); NRC Region I Incident Response Supplement; TMI Program Office Supplement; NRC Headquarters Incident Response Supplement; and the affidavits of Charles O. Gallina and Joseph E. Himes, dated July 23, 1982.

Comment."[59] While other parties made their final emergency plans available over a year ago, the labeling of the Commission's document as "interim" suggests, in our view, a delay in finalized response plans and the possibility that the plans are still subject to alteration or revision.[60]

A comparison of the documents submitted by the staff reveals some troublesome differences between NRC units (*i.e.*, Headquarters, Region I, and the TMIPO) in their approach to the relationship between the licensee and the NRC, their respective roles in plant emergency response, and their coordination with state and county plans. Generally, it cannot be determined exactly how the TMIPO and Region I plans are specifically designed to complement the response procedures of NRC Headquarters, licensee, the Commonwealth and the counties. The voluntary conformance of licensee plans to NRC final plans (when they eventually issue) could also lead to confusion in an emergency. We believe this indicates a certain lack of preparedness by the NRC staff in TMI emergency response planning. See Gallina Affidavit at 10-15; Himes Affidavit at 4-7.

With regard to criteria for NRC response modes and for the transfer of command to the Director of Site Operations (DSO), the use of different terminology by the NRC and licensee could be confusing.[61] See Himes Affidavit at 22-24. In addition, there still exist no specific criteria for deactivation of the NRC response; the decision remains *ad hoc* and subjective. *Id.* at 24. There are also no specific criteria for decisions concerning the assumption of management control by the NRC, nor has the staff yet discussed this possibility with licensee. *Id.* at 29.

Although the staff's response is adequate with regard to training of the Director of Site Operations, we note that the name of the Deputy Director of the TMI Program Office is missing from the list of potential candidates. This must be reconciled with the TMIPO Supplement, which shows him in that role. See Gallina Affidavit, Attachments 3 and 4 and TMI Program Office Supplement, Attachment 2.1. See generally Gallina Affidavit at 34-36.

2. Our second concern involves the apparent difference in perception of the NRC and the licensee of their respective roles in making protective action recommendations and their overall concept of command procedures. It appears as though the staff may not fully understand its role in making protective action recommendations, possibly failing to recognize licensee's primary responsibility in this area.

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[59] Mr. Gallina and Mr. Himes describe the reason for labeling the document interim in their affidavits. They explain that the document was fully implemented as of March 28, 1982. It is "interim" for printing and distribution reasons, and "for comment" *because licensee and state authorities had not yet commented on the material*. Gallina Affidavit at 4; Himes Affidavit at 2-[illegible].

[60] Similarly, with regard to the NRC Region I Incident Response Supplement, we note that Procedure SP-A.2, "Management on Call," is still being written. Gallina Affidavit at 6.

[61] The Director of Site Operations manages the NRC emergency response at the site. See NUREG-0845, Section T, at T-1 to T-8, for a detailed description of DSO duties and tasks.

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See Himes Affidavit at 11-13, 29-33; Gallina Affidavit at 32-33. In NUREG-0845, the NRC Incident Response Plan, recommendations for actions to protect the public are discussed in Function 16 (at II-16 through II-18) as follows:

> The licensee is obligated to take whatever measures are necessary to control and mitigate the impact of a radiological emergency and recommend protective actions to offsite authorities. The NRC must *monitor* licensee measures and their impact to independently assess their adequacy, thereby providing an independent basis for advising offsite officials.

Id. at II-16 to II-17 (emphasis added). We note that this statement generally follows the recommendation of the Report of the President's Commission on the Accident at Three Mile Island,[62] which states (at 78):

> Since the utility must be responsible for the management of the accident, it should also be primarily responsible for providing information on the status of the plant to the news media and to the public; but the restructured NRC should also play a supporting role and be available to provide background information and technical briefings.

However, the Region I Incident Response Supplement, with regard to providing information to the public and formulating protective action recommendations, explains that the NRC plan "is intended to insure the NRC's preparedness:

* * *

- to inform the public and others of plant status and technical details concerning the incident; [and]
- to recommend adequate protective actions to appropriate State agencies. . . ."

Section I, Part C, at 2-3. (The TMI Program Office Supplement does not detail all of the recommended NRC employee actions but refers to the Region I plan.)

What concerns us about these Region I instructions is that they imply that the NRC response team will initiate public information statements and recommend protective actions directly to state and local authorities without consultation with the licensee. See Region I Incident Response Supplement, Section II (Incident Response Procedures), IRIP-B.2.1, at 13-14. The Region I plan appears to depart from the NUREG-0845 recommendations. In our opinion, any such departure increases the likelihood that confusion similar to that experienced at TMI-2 will occur in the event of another accident.

3. Our final concern about the NRC Emergency Response Plan involves the staff duties and personnel locations in an actual emergency. At the hearing before the Licensing Board, the staff repeatedly emphasized the need to reduce crowding in the control room.[63] The TMI Program Office and the Region I Response Plans

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[62] Report of the President's Commission on the Accident at Three Mile Island, John G. Kemeny, Chairman, October 30, 1979.

[63] As indicated in our discussion at p. 1305, *supra*, we believe that the licensee's proposed emergency team will not overcrowd the control room.

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indicate, however, that the staff intends to place four or more NRC personnel in the control room and its nearby Technical Support Center within about one hour after notification.[64] In an Alert, the NRC site team will use the Technical Support Center as the focal point of its operations.[65] The staff also stated that NRC inspectors in the control room may obtain necessary information either by observation or direct communication with licensee personnel, including the reactor operators. Gallina Affidavit (June 17, 1982) at 5.

We strongly recommend that the number of NRC personnel located in the onsite emergency operation centers be carefully monitored and controlled and that any direct communications with the reactor operators be restricted to situations in which such communications are specifically authorized by one of licensee's supervisory personnel (*e.g.*, the shift supervisor). While we would expect all NRC employees to use discretion, we believe that clearly defined limitations on NRC personnel are necessary to avoid a situation which would permit unwarranted distraction or confusion in the control room and Technical Support Center. We urge the Commission to review the number and functions of NRC personnel assigned to onsite emergency operation centers, as well as the conditions under which they will be permitted to speak to the reactor operators.

In conclusion, we believe that the licensee and NRC emergency response plans should complement each other and be coordinated with the Commonwealth and FEMA plans. In making its emergency preparations, the licensee should have full knowledge of the NRC's response plans. At the moment, it appears that the NRC emergency response plan and its implementation details may be the weakest link in the overall emergency plan chain. We believe that in light of our concerns, the NRC staff must supply licensee and the Commonwealth with complete response plans as soon as possible but, in any event, prior to restart. Those plans should remove any ambiguity concerning the staff's functions during the progress of an emergency.

B. The Commonwealth's Use of Protective Action Guides

The Commonwealth's emergency plan provides for instructing the public to take protective action in accordance with the Environmental Protection Agency (EPA) "Protective Action Guides." Those guides recommend that the general public be advised to take some sort of protective action at a projected whole body dose of 1 to 5 rem and a projected thyroid dose of 5 to 25 rem. Commonwealth Ex.

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[64] See memorandum from Lake Barrett, Deputy Program Director, TMI Program Office, to TMI On-Site Staff dated September 22, 1981. This memorandum has attached various items which constitute the Program Office Emergency Plan. Attachment 2.1 is a chart of the Onsite Emergency Response Organization, and Attachment 3.3 specifies primary staffing and backup personnel.

[65] Region I Incident Response Supplement, Section II, IRIP-B.2, at 3.

2a, Appendix 8, Section V, at V-1 to V-2. The choice of protective action depends on the "magnitude of the release, duration of the release, wind speed, wind direction, time of day and transportation constraints." *Id.*, Section VIII, at VIII-1. At the lower end of the protective action guides (*i.e.*, a projected dose of 1 rem whole body or 5 rem thyroid), "sheltering might be opted for even though evacuation might be feasible"; whereas at the upper end, evacuation would most likely be advised, so long as it is feasible. Tr. 18,147-48 (Reilly).[66]

We have no problem with these guidelines, but we do have a serious concern regarding the Commonwealth's basis for calculating projected doses. Commonwealth witness Reilly testified that the Pennsylvania Bureau of Radiation Protection (BRP) has developed accident assessment techniques using a simplified Reactor Safety Study (WASH-1400) fault tree analysis that can be used when the type of accident is known, even if licensee provides no further details. Reilly, fol. Tr. 18,125, at 4. Usually, the BRP would have licensee's data on release rates to the containment, offsite radiation measurements from the licensee and the Commonwealth's own monitoring teams, and meteorological data from the licensee and the Commonwealth's Bureau of Air Quality. See generally Tr. 18,130-40 (Reilly). Ms. Reilly emphasized, however, that if the BRP were to be informed that the core was uncovered and there was some risk of breaching the containment, she would recommend immediate evacuation.

This was based on assumptions similar to those made by the staff, that such accidents would release large portions of the core's radioactive material to the atmosphere.[67] Reilly, fol. Tr. 18,125, at 5-6; Tr. 18,140-45. Dr. Beyea, a witness for intervenor ANGRY, asserted that a release of 70 percent of the radioiodine in the core could produce a thyroid dose at a five mile radius of above 10,000 rem under typical weather conditions. Beyea, fol. Tr. 18,350, at n.9.

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[66] The Commonwealth's general guidelines for the choice of evacuation or sheltering are as follows:

A. Evacuation

This option will be considered when:

1. A core melt accident is underway, which involves or is expected to involve a loss of containment integrity by melt through or by direct release to the atmosphere; or,
2. Projected doses are expected to approach or exceed 1 Rem whole body or 5 Rem to the infant thyroid; or,
3. Release time is expected to be long (greater than 2 hours).
4. Evacuation could be well under way before plume arrival, based on wind speed and travel conditions.
5. Substantial dose savings can be made by avoiding exposure to residual radioactivity (surface deposition).
6. Evacuation appears to be the best option available.

B. Sheltering

1. Projected doses are expected to approach 1 Rem whole body or 5 Rem to the infant thyroid, but not exceed 5 Rem and 25 Rem respectively *and*
2. The combination of warning time, plume arrival time and release time is not long enough to effect evacuation; or,
3. Evacuation cannot be effected so as to avoid a significant fraction of expected exposure; and/or,
4. Sheltering appears to be the best option available.

Commonwealth Ex. 2a, Appendix 8, Section VIII, at VIII-1 to VIII-2.

Licensee's testimony, however, provides a different perspective. First, licensee witnesses Jones and Keaton pointed out that, during the first 20 to 40 minutes of certain loss of coolant accidents, their analyses indicate that the top of the core may be uncovered for short periods of time without overheating the fuel. This would occur during the expected coolant inventory recovery process by the emergency cooling system and should not of itself be cause for ordering emergency evacuations. Tr. 10,661-64, 10,679, 10,700-01 (Jones and Keaton).

Second, in rebuttal to Dr. Beyea, the licensee introduced the testimony of Milton Levenson. This testimony concluded that, even with severe core uncovering and containment cracking, very little radioiodine or other aerosols would be released offsite.[68] Mr. Levenson explained in detail that this was the result of such natural phenomena as "gravity, basic aerosol physics, chemical solubility, chemical reactivity, physical plate-out, and adsorption." Levenson, fol. Tr. 19,525, at 4. See Appendix A to his testimony (at 11-13) for a detailed discussion. He emphasized that

> The above phenomena all act in the same direction to reduce the *magnitude* of the predicted fission product release and change the *character* of the release in that iodine and particulates are greatly reduced relative to the noble gases. Both changes reduce the consequences to the public in terms of acute and latent fatalities and greatly diminish the area around the reactor over which a serious threat may exist. None of these phenomena is dependent on somebody making the right decision, equipment functioning correctly, or power being available. They are always acting.

Levenson, fol. Tr. 19,525, Appendix A, at 13.

Mr. Levenson explained that his conclusions were based on the experimental results of a series of small and large containment experiments and, perhaps most persuasively, on the measurements of releases from several actual reactor accidents. *Id.* at 3-10. Mr. Levenson noted that Appendix A to his testimony was a paper written essentially as a follow-on to a similar paper by Campbell,

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[67] The models used to estimate releases from the core generally assume that any melting of the reactor core will within minutes lead in all cases to a catastrophic failure of the pressure vessel and containment building. Levenson, fol. Tr. 19,525, Appendix A, at 10-11.

[68] See Testimony of Milton Levenson on Realistic Estimates of the Consequences of Nuclear Accidents for Use in Emergency Planning, fol. Tr. 19,525.

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Malinauskas and Stratton which treated the radioiodine reduction as the result of chemical linkage with cesium while still within the fuel rods. Tr. 19,579.[69]

Counsel for the NRC staff maintained that Mr. Levenson's testimony was not a proper subject for litigation because the Commission is still considering the matter by other means. Tr. 19,501 (Gray). However, he did question Mr. Levenson on the subject of NUREG-0772, a study of this matter prepared for the NRC by Battelle Columbus Laboratories, Oak Ridge National Laboratory and Sandia National Laboratories.[70] See generally Tr. 19,552-66. Mr. Levenson noted that this study was not an answer to either Campbell, *et al.*, or his paper because it reused the same computer codes without checking the correctness of their assumptions about radiological releases from the reactor and reactor building and, predictably, got the same answers. Tr. 19,531-32 (Levenson). The study further ignored the "evidence arising from [reactor] accidents and big integral experiments by saying that the instrumentation for those projects was such that the data [were] not suitable for the computer analysis." Tr. 19,532 (Levenson).

This last point is important, because much of the credibility of Mr. Levenson's argument arises from his use of data from actual accidents. Accidents at Fermi Unit 1 (1966), the Experimental Breeder Reactor-1 in Idaho (1955), the Sodium Reactor Experiment (SRE) facility in California (1959), the NRX reactor in Chalk River (1952), and the Westinghouse Test Reactor (1960), all resulted in core damage but no significant release of radioactive material. Three major reactor accidents resulted in some radioactive releases, as discussed below. See Levenson, fol. Tr. 19,525, Appendix A, at 3-4.

a. In October 1957 the Windscale air-cooled reactor in England had a major fire which lasted two days. Despite the large inventory of iodine in the core, the lack of any water to absorb the iodine, the absence of a containment building, and the presence of high air velocities and high temperatures in the core, only a small fraction of the iodine was emitted from the stack. *Id.* at 3.[71]

b. On January 3, 1961, the SL-1 experimental reactor at the Idaho testing station experienced a sudden power excursion. About 19 percent of the core melted, but only about 20 curies of iodine (out of a core inventory of 28,000 curies) escaped.[72] Similar results were noted for the escape of cesium and strontium relative to the core inventory. We note that this reactor was housed in a simple "drafty" sheet metal building. *Id.* at 3-4.

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[69] A compendium of eight papers on the general subject of radioactive emissions from a reactor accident was published in the May 1981 issue of *Nuclear Technology*, and the matter was briefed to the Presidential Nuclear Safety Oversight Committee (NSOC) on December 16, 1980. Levenson, fol. Tr. 19,525, at 3.

[70] NUREG-0772, "Technical Bases for Estimating Fission Product Behavior During LWR Accidents" (June 1981).

[71] Levenson indicates that the iodine attenuation factor from Windscale was about 10^3 as compared with the estimated attenuation factor of 1.5 used in the staff's computer code for light water cooled reactors. See Levenson, fol. Tr. 19,525, Appendix A, at 11 and Table 2. See also Tr. 19,587-88.

[72] The computer codes used for calculating the consequences of reactor accidents in WASH-1400 would overestimate this source term by a factor of about 300. Tr. 19,602 (Levenson).

c. The TMI-2 accident in March 1979 released less than 1 part in ten million of the total iodine inventory and about two percent of the noble gas inventory despite major core damage. *Id.* at 4.

In our opinion, the Licensing Board erred in selectively ignoring the Levenson testimony in its initial decision. However, we believe our review and discussion of Mr. Levenson's testimony cures this error. Mr. Levenson is a responsible witness[73] who gave important uncontroverted testimony and was extensively cross-examined by the staff and the Commonwealth. Our concern over this omission is heightened by the fact that witnesses for both the staff and the Commonwealth at the TMI-1 restart hearing emphasized evacuation as the protective action of choice for major accidents. If Mr. Levenson's conclusions on the emission of radioactive releases from power reactors are reasonable representations of reality (and we believe they are), unnecessary evacuations are likely to occur. Unnecessary evacuation of a large number of the general public because of unrealistic expectations of radiation dosage is not "conservative" and is likely to be counterproductive.[74]

We strongly urge the Commission to expedite its consideration of the data and arguments presented by Levenson, Campbell and others. We believe that the data from actual reactor accidents are too strong to be ignored.

Accordingly, the Licensing Board's decision with respect to the need for TLDs is *affirmed*. Its decision with respect to the staffing of the EOF is *reversed* and the licensee's proposal for staffing the EOF is approved subject to the following conditions:

1. Licensee must maintain a minimum onsite staff of 20 individuals at all times, including separate individuals trained to act as Emergency Director, Operations Coordinator, Technical Support Center Coordinator, and Radiological Assessment Coordinator. See Licensee Ex. 30, Table

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[73] Mr. Levenson, a licensed Professional Engineer in the State of Illinois, holds a Bachelor's degree in Chemical Engineering from the University of Minnesota and a Master's degree in Business Administration from the University of Chicago. He has been Associate Laboratory Director for Energy and Environment, Argonne National Laboratories (1973); and Director of the Nuclear Division, Electric Power Research Institute (1973-81); and is currently Engineering Consultant and Special Assistant to the General Manager, Bechtel Power Corp. He is the current Vice President and President Elect of the American Nuclear Society. Levenson, fol. Tr. 19,525 (professional qualifications).

[74] Our colleague refers to our discussion of the Board's action on Mr. Levenson's testimony as "not strictly necessary," p. 1323, *infra*. We disagree. We believe the Licensing Board erred in not discussing the source terms to be used in deciding on protective actions. Since the NRC Commissioners now have this matter under consideration, the fact that important evidence on the subject was presented by the licensee in answer to an intervenor's contention should be made known to them. We are doing just that by this decision.

12, at 1. Any change from the terms of this condition shall be permitted only after a determination by the NRC staff (with notification to the Commonwealth of Pennsylvania) that licensee's overall emergency response capability will not be diminished as a result of the proposed change.

2. The Emergency Support Director shall be notified upon declaration of any alert and shall immediately begin preparations to arrive at the EOF as soon as practicable, but in no event later than four hours after the declaration of a site emergency.
3. A test of communications between the licensee, on the one hand, and Commonwealth and local officials, on the other, including the issuance of protective action recommendations by the Emergency Director, shall be conducted under the conditions discussed in this opinion at the next available opportunity, and the results of the test reported to the Commission.

Finally, insofar as the emergency plans are concerned, the Director of Nuclear Reactor Regulation may not authorize the restart of TMI-1 until the NRC staff's emergency response plans, as modified and completed in accordance with this decision, have been distributed in final form to the licensee and Commonwealth.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

The separate opinion of Mr. Edles follows.

SEPARATE OPINION OF MR. EDLES, CONCURRING IN PART AND DISSENTING IN PART

I join fully in Part I of the Board's decision disposing of the exception filed by the Commonwealth of Pennsylvania regarding predistribution of dosimeters. I write separately to highlight the tentative nature of my endorsement of the licensee's plan for making protective action recommendations as discussed in Part II of the Board's opinion and to explain why I join only in the result reached in Part III.

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A. The Emergency Operations Facility (EOF) is the command center for the licensee's overall management of any emergency. Under the staff's approach, as approved by the Licensing Board, the EOF is to be supervised by an Emergency Support Director whose functions include setting up and coordinating activities at the EOF. He would also be responsible for making protective action recommendations to state and local officials. These matters are fully discussed in Part II of the Board's opinion.

The staff argued below that the licensee must have available to it a qualified individual who could act as Emergency Support Director within an hour of a declaration of a site emergency. Among other things, he must have responsibility for making protective action recommend ations. As an alternative, the licensee proposed to assign several members of its response team to the EOF within an hour but did not place any individual clearly in charge. Its plan was to have a headquarters officer from New Jersey come to the EOF in the event of an accident and assume the responsibilities of Emergency Support Director within four hours after declaration of a site emergency. During the interim, the licensee proposed that the Emergency Director, who is its senior official at TMI and would be located in the control room in the event of an emergency, would make protective action recommendations. The Licensing Board rejected the licensee's alternative. It explained that the licensee had the burden of proving the "workability and adequacy" of its proposal and that, on balance, it had failed to meet that burden. 14 NRC at 1477-1478. See generally 14 NRC at 1467-1479.

On appeal, an appeal board (acting for the Commission) may substitute its judgment for that of a licensing board where it believes that an alternate result is preferable. I believe we should ordinarily accord a licensing board deference in close cases where it has examined an issue fully, weighed and balanced various conflicting considerations, and reached a sensible result supported by the evidence. See *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 402-405 (1976). Absent changed circumstances, I would affirm the Board's decision.

After the Licensing Board's decision was issued, however, the licensee voluntarily made adjustments to its plan to accommodate certain of the Board's concerns. Most importantly, it has now given the Assistant Emergency Support Director supervisory responsibility for activating and coordinating the EOF. He would not, however, have responsibility for making protective action recommendations. The licensee continues to argue that such responsibility should reside with the Emergency Director during the early hours following onset of an emergency. My colleagues agree. In their view, the licensee has properly placed ultimate decisional responsibility in the hands of its senior official at the site. They also believe that decisions should be made during those early hours from the control room, where accurate information will be more readily available. In addition, they impose two express conditions designed to insure that (1) there will always be

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adequate personnel available to accord the Emergency Director the needed time to make protective action recommendations and (2) any official arriving from New Jersey to reinforce the emergency effort will respond as soon as possible. In light of these factors, they reverse the Licensing Board and conclude that the licensee has now demonstrated that its plan is adequate despite the failure of a designated Emergency Support Director to arrive for up to four hours.

I am still unprepared to conclude on the record before us that the licensee has proven that its plan is satisfactory. I nevertheless believe that the new plan is worthy of a test of its efficacy and reliability. In contrast to the majority, I believe such a test must be conducted prior to restart.

It is important, at the outset, to spell out three matters that I believe are not now in dispute. First, it is clear that the licensee has sufficient qualified personnel available at the site to cope with an emergency from the outset. Although the Licensing Board was troubled that the licensee may have been relying too heavily on personnel from its headquarters in New Jersey, the record makes clear that the licensee has available at the site an adequate number of qualified people, including individuals who can serve as Emergency Director and Emergency Support Director immediately. See 14 NRC at 1469-1471, 1477-1478. The headquarters officer who would become Emergency Support Director upon arrival would simply replace an otherwise qualified employee. Second, as my colleagues correctly point out, two lessons learned from the TMI-2 accident pose what is, in the final analysis, an irreconcilable decisional conflict. On the one hand, the licensee must take steps to insure that individuals responsible for making protective action recommendations base those recommendations on accurate and up-to-the-minute information. This argues in favor of placing the responsibility for making such recommendations initially with the Emergency Director in the control room, where he will have accurate and timely first-hand information. On the other hand, the licensee should not place too many people in the control room nor require too many functions to be performed by control room personnel during an emergency. This argues in favor of removing the responsibility for making protective action recommendations promptly to the offsite facility — an approach employed at many nuclear plants across the nation.[1] Third, the issuance of protective action recommendations will be a cooperative effort in which officials in both the control room and the EOF must participate, irrespective of the specific division of responsibility or chain of command ultimately adopted.

The Licensing Board believed that, after one hour, any necessary protective action recommendations should be made by an Emergency Support Director in the EOF. The staff, which supports this result on appeal, would appear to be satisfied if the licensee would agree to designate any qualified employee — presumably a

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[1] Tr. 23,071 (Chestnut). See, for example, Cooper Nuclear Station Emergency Plan, Section 7.2.3, at 7-7 (Feb. 5, 1982) (on file, NRC Public Document Room).

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junior employee — as Emergency Support Director, with responsibility for making protective action recommendations from the EOF. The licensee would prefer that its Emergency Director be responsible for making protective action recommendations until an officer from New Jersey arrives but is prepared, if necessary, to station its most senior official in the EOF with responsibility for making protective action recommendations, and assign the responsibilities of the Emergency Director to an otherwise qualified, but presumably junior official in the control room. This would bring the licensee into compliance with the Licensing Board's decision. As noted above, my colleagues endorse the licensee's approach; they would, however, allow protective action recommendations to be made by the Emergency Director during the first four hours only under conditions intended to prevent potential problems.

At oral argument, counsel for the Commonwealth offered what seems to me to be a sensible and preferable means of resolving the issue. He observed that, although numerous changes in the emergency plan had been made in light of experience obtained at various drills and exercises, there has been no test of how things would work if protective action recommendations were made by the Emergency Director in the control room in light of various improvements which resulted from earlier drills. App. Tr. 102. See generally App. Tr. 91-102. Needless to say, there has been no test of the emergency preparedness plan under the conditions imposed today by my colleagues. In such circumstances, the licensee has not, in my judgment, as yet met its burden of demonstrating that the plan, as it has evolved, will work. If it nonetheless wishes to pursue its plan, I would adopt and expand the Commonwealth's suggestion and order a test of the plan *as a condition of restart*. The test would be conducted under both the changes proposed by the licensee following the Licensing Board's decision and mandated by the Board today. The results of the test could be reported to us or to the Commission by the licensee, the staff, and the Commonwealth.

As I read the record, the emergency response plan has improved with each succeeding drill or exercise. The Licensing Board rejected the licensee's original approach because the licensee had not met its burden of proving its "workability and adequacy." Various changes in the licensee's plan now seem to obviate certain of the Licensing Board's concerns. What I find lacking, however, is an opportunity to examine the adequacy of the new approach.

If, as I suspect and as my colleagues believe, a drill or exercise will demonstrate the strengths of the licensee's plan as it has now evolved, I would approve it. If, however, for reasons I am unable to foresee, the absence of the Emergency Support Director during the early hours following declaration of a site emergency compromises the efficacy or reliability of the overall emergency response in any significant way, I would withhold approval and instead require that the licensee have a qualified individual expressly designated as the Emergency Support Director available within an hour as the Licensing Board insisted. (As an alternative, the licensee could comply with the Licensing Board's decision on an interim basis and conduct the test at the next practical opportunity.) I agree with my colleagues that this is one situation in which a little more practical experience will be worth months of further adversary procedures.

B. In Part III of the Board's decision, my colleagues raise on their own and discuss at some length a number of technical aspects of the staff's incident response plan and the Commonwealth's plan regarding protective action guides. In only two respects, however, do they order corrective action.[2] In all other respects, their *sua sponte* discussion, while certainly appropriate, is not strictly necessary, for our task on a *sua sponte* review is to determine whether corrective action on our part concerning an unappealed Licensing Board determination is warranted. See, *e.g.*, *Commonwealth Edison Company* (Dresden Station, Units 2 and 3), ALAB-695, 16 NRC 962 (1982); *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 & 2), ALAB-644, 13 NRC 903, 996 (1981). See generally, *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-685, 16 NRC 449, 451-52 (1982). Except with respect to the two items noted above, my review of unappealed portions of the emergency planning aspect of the decision below has not disclosed cause for an alteration in the result reached by the Licensing Board.

I agree fully with my colleagues that all emergency response plans should complement each other, that all emergency response efforts should be coordinated, and that the Commonwealth should rely on the best available scientific information in formulating protective action decisions. The debate over methods of implementing these principles is neither new nor unique to this proceeding. As a consequence, apart from the imposition of the two explicit conditions required by my colleagues, in which I am willing to join, I would not use this adjudication as a forum for suggesting how these principles should best be implemented.

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[2] The staff is explicitly directed to complete and distribute its emergency response plan prior to restart. It must also reconcile that plan with the TMIPO Supplement insofar as the Deputy Director of the TMI Program Office is listed as a potential Director of Site Operations in one but not the other. See pp. 1312 and 1314, *supra*.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Christine N. Kohl

In the Matter of **Docket No. 50-289-SP**
(Management Phase)

METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island Nuclear
Station, Unit No. 1) **October 27, 1982**

The Appeal Board accepts the Licensing Board's referral of an intervenor's motion to reopen the management phase of the record in this restart proceeding. The motion was filed after the filing of exceptions to the Board's initial decision. The Appeal Board decides that jurisdiction to rule on a motion to reopen filed at that time rests with it rather than the Licensing Board, but defers ruling on the motion until it has achieved greater familiarity with the record.

LICENSING BOARDS: JURISDICTION

A licensing board is implicitly empowered to reopen a proceeding at least until the issuance of its initial decision, but no later than either the filing of exceptions or the expiration of the period during which the Commission or an appeal board can exercise its right to review the record. See 10 CFR §§2.717(a), 2.760(a), 2.718(j).

LICENSING BOARDS: JURISDICTION

Jurisdiction to rule on a motion to reopen filed after exceptions have been taken rests with the appeal board rather than the licensing board.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

An appeal board, unlike other apellate tribunals, has the option of reopening the record and receiving new evidence itself, if necessary, obviating remand to a licensing board. See, *e.g.*, *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-598, 11 NRC 878-79 (1980).

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

The disposition of a motion to reopen turns on whether (1) it is timely, (2) it addresses a significant issue, and (3) a different result might have been reached if the new material had been previously considered. *Diablo Canyon, supra*, 11 NRC at 879.

MEMORANDUM AND ORDER

In a series of partial initial decisions and orders issued between August 1981 and July 1982, the Licensing Board announced its findings of fact and conclusions of law in this special proceeding instituted to determine whether Unit 1 of the Three Mile Island nuclear facility should be restarted.[1] Exceptions have been filed to each decision and appellate review of emergency planning issues is now completed.[2] Review of other issues by two appeal boards, including this one, is under way.

On September 3, 1982, after the filing of all exceptions, intervenor Marjorie M. Aamodt filed a motion with the Licensing Board requesting a reopening of the management phase of the record. The asserted ground for reopening is an NRC staff Board Notification, BN-82-84 (August 17, 1982). In Inspection Report 50-289/82-07, attached to the Board Notification, the staff states that, while conducting a review of radiation worker training records on May 5, 1982, the licensee's Radiological Assessor observed that certain examinations and their

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[1] See LBP-81-32, 14 NRC 381, 386-99 (1981), for a discussion of the history and procedural background of this case. See also LBP-81-59, 14 NRC 1211 (1981); LBP-81-60, 14 NRC 1724 (1981); LBP-82-56, 16 NRC 281 (1982).

[2] See ALAB-697, 16 NRC 1265 (1982); ALAB-698, 16 NRC 1290 (1982).

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answer keys had been left unattended. The Radiological Assessor immediately reported this to senior licensee management and, several days later, to the NRC staff. According to the report, this appeared to be an isolated incident and various corrective actions have been taken. Ms. Aamodt argues, however, that this matter raises various questions about the licensee's integrity — an issue that is within the scope of this proceeding and should now be explored more fully. She also contends, among other things, that the NRC staff should be required to explain why it "withheld this information for over three months." Aamodt Motion for Reopening of Record (September 3, 1982) at 1-2. Both the staff and licensee filed oppositions to the motion to reopen.

The Licensing Board ruled that it lacked jurisdiction over the subject matter of the motion. LBP-82-86, 16 NRC 1190, 1191 (1982). It noted some arguable inconsistencies in the Commission's Rules of Practice and lack of clear appeal board precedent, but nonetheless reasoned that jurisdiction passes from a licensing board to an appeal board when the former issues its initial decision. *Id.* at 1193. It therefore referred the motion and related pleadings to us, declining to express an opinion on the merits.

We agree with the Licensing Board's ruling that it no longer has jurisdiction over the Aamodt motion to reopen.[3] As the Board noted, the Commission's Rules do not directly answer the question of when jurisdiction passes, for purposes of a motion to reopen, from a licensing to an appeal board. Several provisions, however, are pertinent.

10 CFR §2.717(a) states that a licensing board's "jurisdiction in each proceeding will terminate upon the expiration of the period within which the Commission may direct that the record be certified to it for final decision, or when the Commission renders a final decision . . . whichever is earliest."[4] Pursuant to 10 CFR §2.760(a), a licensing board's initial decision in a licensing proceeding becomes final agency action within 45 days of its issuance, unless exceptions have been timely filed, or the Commission or the appeal board as its delegate (see 10 CFR §2.785) certifies the record to it for subsequent review and final decision.[5] Finally, 10 CFR §2.718(j) authorizes a licensing board to "[r]eopen a proceeding for the reception of further evidence at any time prior to initial decision." Taken together, these provisions imply that a licensing board is empowered to reopen a proceeding at least until the issuance of its initial decision, but no later than either

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[3] The Licensing Board correctly observed that we have declined to decide similar jurisdictional issues on past occasions. See, *e.g.*, *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-591, 11 NRC 870, 873-74 (1980); *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-591, 11 NRC 741, 742 n.3 (1980); *Northern States Power Company et. al.*, (Tyrone Energy Park, Unit 1), ALAB-464, 7 NRC 372, 374 n.4 (1978). We see no cause, however, to resist reaching the issue any longer.

[4] See generally *Houston Lighting and Power Company et. al.*, (South Texas Project, Unit Nos. 1 and 2), ALAB-381, 5 NRC 582, 590-91 (1977).

[5] See *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), ALAB-689, 16 NRC 887, 890 & n.4 (1982).

the filing of exceptions or the expiration of the period during which the Commission or an appeal board can exercise its right to review the record. Applied here, the Rules thus suggest that the Licensing Board's jurisdiction to reopen this proceeding lapsed, at the latest, when exceptions to its last partial initial decision were filed.

Although there is no direct appeal board precedent on the issue (see note 3, *supra*), our decisions are consistent with this application of the Rules of Practice. Both *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-591, 11 NRC 741, 742 n.3 (1980), and *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 2), ALAB-86, 5 AEC 376, 377 (1972), suggest that a licensing board has authority to reopen a proceeding until it has issued a complete initial decision on all issues before it. On the other hand, in *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-598, 11 NRC 876, 878-79 (1980), *we* entertained (and, in fact, granted) a motion to reopen filed after not only issuance of the initial decision but also briefing of the appeals. We therefore hold that jurisdiction to rule on a motion to reopen filed after exceptions have been taken — like that in the instant case — rests with the appeal board rather than the licensing board.[6]

We regard this as the most workable solution for the jurisdictional question posed by the Aamodt motion. Once exceptions are filed, appeal board review of the merits commences. Encompassed within such review is a general concern about the adequacy of the record developed before the licensing board. Thus, in most cases, we can incorporate in our review any matters pertinent to a request to reopen the record. Moreover, unlike other appellate tribunals, we have the option of reopening the record and receiving the new evidence ourselves, if necessary, obviating remand to a licensing board. See, *e.g.*, *Diablo Canyon, supra*. Compare the federal court procedure outlined in 6A J. Moore, *Moore's Federal Practice* ¶59.09[5] (2d ed. 1979).

We therefore acknowledge jurisdiction over the Aamodt motion to reopen and accept the Licensing Board's referral. At the same time, however, we defer ruling on its merits. The disposition of such a motion turns on whether (1) it is timely, (2) it addresses a significant issue, and (3) a different result might have been reached if the new material had been previously considered. *Diablo Canyon, supra*, 11 NRC at 879. Our appraisal of particularly the last factor is one we cannot and, in any event, do not wish to make in this case until we have achieved a greater familiarity with the total record.[7] Further, in urging a prompt disposition of the Aamodt motion, licensee fails to demonstrate any compelling reason for our acting on the request to reopen without being fully conversant with the record. See Licensee's Answer to Aamodt Motion (September 20, 1982) at 2 n.1.[8]

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[6] We leave for another day the question of where jurisdiction lies to rule on a motion to reopen filed after the issuance of the initial decision but before the filing of exceptions.

[7] Thus far, briefing of only appellants' case is completed.

For the reasons stated, we assert jurisdiction over the Aamodt motion to reopen but defer ruling on it, pending further order.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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[8] The Commission itself has assumed the responsibility for the "immediate effectiveness" review of the Licensing Board's decision and thus will determine if and when TMI-1 will restart. CLI-81-34, 14 NRC 1097 (1981).

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Eilperin, Chairman
Christine N. Kohl
Dr. Reginald L. Gotchy

In the Matter of **Docket Nos. 50-522**
50-523

PUGET SOUND POWER AND LIGHT COMPANY, *et al.*
(Skagit/Hanford Nuclear Power Project, Units 1 and 2) **October 29, 1982**

The Appeal Board reverses a Licensing Board decision (LBP-82-74, 16 NRC 981 (1982)) that held petitioner (an authorized representative of the collective fishing interests of four Columbia River Indian tribes) did not have standing to intervene in this construction permit proceeding and remands the proceeding to the Licensing Board with instructions to grant the petition subject to its finding of at least one admissible contention proffered by the petitioner.

LICENSING BOARDS: SCOPE OF REVIEW (INTERVENTION PETITION)

A licensing board is not obliged to grant an intervention petition simply because it is unopposed; the board must still evaluate it for compliance with Commission intervention requirements.

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RULES OF PRACTICE: APPELLATE REVIEW (INTERVENTION PETITION)

An appeal board will not overturn a licensing board's denial of intervention without reviewing that decision on the merits, even if the appeal is unopposed.

RULES OF PRACTICE: STANDING TO INTERVENE

To obtain standing to intervene in an NRC licensing proceeding, a petitioner must allege (1) an "injury in fact" that has occurred or will probably result from the proposed licensing action, and (2) an interest that is within the "zone of interests" protected by the Atomic Energy Act. *Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976).

RULES OF PRACTICE: STANDING TO INTERVENE

An organization is not precluded from intervening in an NRC licensing proceeding merely because one of its constituent members has already intervened.

RULES OF PRACTICE: STANDING TO INTERVENE

An organization can have standing as a representative of its members' interest. *Warth* v. *Seldin*, 422 U.S. 490, 511 (1975); *Sierra Club* v. *Morton*, 405 U.S. 727, 739 (1972).

RULES OF PRACTICE: STANDING TO INTERVENE (AUTHORIZATION)

An organization specifically empowered by its members to promote certain of their interests has those members' authorization to act as their representative in any proceeding that may affect those interests. See *Hunt* v. *Washington Apple Advertising Commission*, 432 U.S. 333, 342-45 (1977); *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-536, 9 NRC 402, 404 n.2 (1979); *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377, 395-96 & n.25 (1979).

APPEARANCES

Mr. S. Timothy Wapato, Portland, Oregon, for the petitioner, Columbia River Inter-Tribal Fish Commission.

Mr. F. Theodore Thomsen, Seattle, Washington, for the applicants, Puget Sound Power and Light Company, *et al.*

Mr. Lee Scott Dewey for the Nuclear Regulatory Commission staff.

DECISION

This is an appeal by the Columbia River Inter-Tribal Fish Commission (CRITFC) from the Licensing Board's decision denying for lack of standing its petition to intervene in the construction permit proceeding for the Skagit/Hanford Nuclear Power Project. See LBP-82-74, 16 NRC 981 (1982). The NRC staff supports the appeal; the applicants agree with the Licensing Board's decision but, in the interest of avoiding extended litigation over the admission of CRITFC as an intervenor, do not oppose the appeal.[1] For the reasons stated, we reverse the Licensing Board's decision and direct the Board to grant the petition to intervene subject to the Board's finding of at least one admissible contention proffered by CRITFC.[2]

I.

On February 5, 1982, the Commission published a notice of opportunity for interested persons to file petitions for leave to intervene in the Skagit/Hanford proceeding no later than March 8, 1982. 47 *Fed. Reg.* 5554. CRITFC filed its intervention petition late, on May 5, 1982. It described itself as an organization composed of the fish and wildlife committees of four Columbia River tribal governments that have rights secured by treaties with the United States to fish and hunt in and around the Columbia River.[3] CRITFC claimed that construction and

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[1] Applicants' Response to Appeal (October 6, 1982) at 2-3.

[2] The affirmative absence of opposition to this appeal places it in an unusual posture. A licensing board is not obliged to grant an intervention petition simply because it is unopposed; the board must still evaluate it for compliance with Commission intervention requirements. By the same token, we will not overturn a licensing board's denial of intervention without reviewing that decision on the merits, even if the appeal is unopposed. For this reason, we reach the merits of CRITFC's appeal.

[3] The four tribes are the Confederated Tribes of the Warm Springs Indian Reservation; Confederated Tribes and Bands of the Yakima Indian Nation; Nez Perce Tribe of Idaho; and Confederated Tribes of the Umatilla Indian Reservation. The Yakima Indian Nation filed its own intervention petition on May 10, 1982, which the Licensing Board has conditionally granted. See LBP-82-74, *supra*, 16 NRC at 984-85.

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operation of the Skagit/Hanford project could threaten the existence of anadromous fish in the Columbia River.[4] In broad terms, CRITFC identified several ways in which the Skagit/Hanford plant posed a risk to the Columbia River anadromous fisheries, among them the possibility of accidental release of fission products and the risk from long-term storage of the plant's radioactive waste. Thus, CRITFC asserted the Skagit/Hanford project might impair the tribes' treaty-secured interests and consequently injure their culture, religion, and commerce.[5] Neither applicants nor the staff contested CRITFC's standing to intervene.[6]

On July 2, 1982, the Licensing Board issued an unpublished memorandum and order citing several technical deficiencies in CRITFC's petition, including the supposed problem that CRITFC could not represent the tribes because the Yakima Indian Nation had filed its own intervention petition.[7] In response, CRITFC submitted a "clarification" to the effect that it did not represent the Columbia River treaty tribes but was "an independent body" that

> by the direction of its Commissioners assists the four Fish and Wildlife Committees in their coordinated programs and actions to protect, promote, and enhance the fish, wildlife, and water resources secured by treaties with the United States.[8]

Citing these statements, applicants argued for the first time that CRITFC's petition should be denied because the petitioner lacked the requisite standing to intervene.[9] On August 19, 1982, CRITFC filed a motion for leave to reply to the applicants on the question of standing. See 10 CFR 2.730(c). CRITFC asserted (at 6) that all tribal members and organizations (including each fish and wildlife committee individually and collectively as CRITFC) may be affected by the diminution of the tribes' treaty-secured fishing rights.[10]

In the memorandum and order before us on appeal, the Licensing Board denied CRITFC's petition. The Board determined that CRITFC does not represent the four Columbia River tribes and is not authorized to represent their treaty rights. CRITFC's interest in protecting those rights is, in the Board's view, only "academic" and it therefore lacks the requisite standing to intervene. LBP-82-74, *supra*, 16 NRC at 983-84.

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[4] Anadromous fish are those, like salmon, that swim upstream for breeding. See generally *Washington v. Washington State Commercial Passenger Fishing Ass'n*, 443 U.S. 658, 662-66 (1979).

[5] CRITFC Intervention Petition (May 5, 1982) at 3-4.

[6] Applicants did, however, oppose the intervention petition on lateness grounds, an objection it has since waived. Compare Applicants' Response in Opposition to Untimely Petition to Intervene (May 19, 1982) with Applicants' Response to Appeal (October 6, 1982) at 2-3.

[7] See note 3, *supra*. See also note 12, *infra*.

[8] CRITFC Response (July 16, 1982), Attachment I.

[9] Applicants' Response in Opposition to Motion for Admission of Second Supplement to Petition to Intervene (July 30, 1982) at 3-6.

[10] The Licensing Board did not rule on CRITFC's August 19 motion

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II.

Whether CRITFC has standing to intervene in this proceeding depends on whether it has alleged (1) an "injury in fact" that has occurred or will probably result from the issuance of construction permits for the Skagit/Hanford facility, and (2) an interest that is within the "zone of interests" protected by the Atomic Energy Act. *Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976). There is apparently no dispute that the petitioner's stated interest in protecting and conserving the anadromous fish resources of the Columbia River comports with the zone of interests requirement.[11] We find that CRITFC has also made the requisite showing of injury as an authorized representative of the collective fishing interests of the Columbia River treaty tribes that might be affected by this proceeding.

In its various filings with the Licensing Board, CRITFC did not always artfully describe its organization and thus may have unintentionally misled the Licensing Board to its own detriment. While CRITFC in its original petition described itself as an organization composed of the fish and wildlife committees of four Columbia River tribal governments with treaty-secured rights to fish in that river, its July 16, 1982 "clarification" was to the effect that CRITFC did *not* speak for or on behalf of the Columbia River tribes. Yet its constitution and bylaws now filed with us explicitly provide that those tribes form the membership body of the organization, and that CRITFC is empowered to "[f]ormulate, in consultation and consent with local tribal councils, a broad general fisheries program designated to promote and coordinate the conservation practices of the members."[12] CRITFC is also authorized to seek advice and consult with any and all organizations (including the federal government) on matters pertaining to fisheries.[13] Petitioner's main function is to protect, promote, and enhance the Columbia River fishery resource as measured by the integrity of treaty-secured rights held by its members.[14] This work, CRITFC asserts, would be "fruitless" if the Columbia River fishery stocks were somehow depleted as a result of construction and/or operation of the Skagit/Hanford project.[15]

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[11] See NRC Staff Brief in Support of CRITFC Appeal (October 8, 1982) at 7-8.

[12] Constitution and Bylaws of the Columbia River Inter-Tribal Fish Commission, attached as Exhibit A to CRITFC Appeal Memorandum (September 23, 1982). The confusion about CRITFC's representational status may be traceable to the Licensing Board's mistaken suggestion in its July 2, 1982 memorandum and order that an organization is not entitled to intervene in a proceeding where one of its constituent members has already intervened. (It is not uncommon for both a trade association and several of its members to participate as separate parties in a lawsuit. See, *e.g.*, *American Textile Mfrs. Inst., Inc.* v. *Donovan*, 452 U.S. 490, 494 n.2 (1981).) Be that as it may, the constitution and bylaws make plain CRITFC's delegated power to represent the tribes on fishing rights issues. Read in context with its constitution and bylaws, CRITFC's "clarification" filed with the Licensing Board, in our view, only means that each tribe retains the right to represent itself, as the Yakima Indian Nation has done in this proceeding.

It would have been preferable for CRITFC to have filed its constitution and bylaws with the Licensing Board so that it could have had the benefit of reviewing CRITFC's delegated powers. Although we are usually not inclined to take notice of materials submitted for the first time on appeal, we do so here because no one has objected to consideration of the document, it is the organization's basic charter, and it crystallizes the information presented in CRITFC's filings with the Licensing Board.

[13] CRITFC Constitution and Bylaws, note 12, *supra*.

These allegations suffice to demonstrate CRITFC's standing as a representative of its members' interest. *Warth* v. *Seldin*, 422 U.S. 490, 511 (1975); *Sierra Club* v. *Morton*, 405 U.S. 727, 739 (1972). CRITFC's purpose is to protect the Columbia River fishery resources and to assist its members in coordinated efforts to conserve that resource.[16] Plainly, injury to the Columbia River anadromous fisheries would adversely affect the tribes that form CRITFC's membership. Nothing more need be shown to fulfill our standing requirements. An organization specifically empowered by its members to promote certain of their interests has those members' authorization to act as their representative in any proceeding that may affect those interests. See *Hunt* v. *Washington Apple Advertising Commission*, 432 U.S. 333, 342-45 (1977); *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-536, 9 NRC 402, 404 n.2 (1979); *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377, 395-96 & n.25 (1979).[17]

The Licensing Board's decision is *reversed* and the cause is *remanded* with instructions to grant CRITFC's petition to intervene, subject to the Board's finding of at least one admissible contention proffered by CRITFC.[18]

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

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[14] See CRITFC Response (July 16, 1982), Attachment 1.

[15] *Ibid.*

[16] *Ibid.*; CRITFC Appeal Memorandum (September 23, 1982) at 5. CRITFC has participated in other non-NRC proceedings to represent and vindicate those precise interests. CRITFC Intervention Petition (May 5, 1982) at 9-12; CRITFC Response (July 16, 1982), Attachment 1.

[17] In view of our holding that CRITFC has standing to intervene in a representational capacity, we need not and do not decide whether CRITFC is entitled to intervene in its own right.

[18] Applicants have effectively waived further objection to the untimeliness of CRITFC's petition. See note 6, *supra*.

Atomic Safety and Licensing Boards Issuances

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Cite as 16 NRC 1335 (1982) **LBP-82-88**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Jerry R. Kline
Hugh C. Paxton

In the Matter of **Docket Nos. 50-266-OLA**
50-301-OLA

WISCONSIN ELECTRIC POWER COMPANY
(Point Beach Nuclear Plant, Units 1 and 2)

October 1, 1982

The Licensing Board grants summary disposition as to all contested issues except whether eddy current testing is sufficiently reliable to detect potentially dangerous through-wall cracks in sleeves inserted within corroded steam generator tubes, and a related issue whether the eddy current tests are necessary to assure the safety of the repaired steam generator.

Summary disposition is granted with respect to: (1) several contentions found to be irrelevant to the sleeving demonstration program, (2) a contention concerning the unreliability of temporary workers, and (3) a contention concerning the safety of the steam generator during sleeving. These latter two contentions were dismissed because there was no evidence that they presented genuine issues. The temporary workers contention was based on experience at an entirely different nuclear plant and did not directly question sleeving procedures to be used at Point Beach. The loose parts contention was dismissed because all of the planned work will be done on the primary side, so that loose parts cannot be left on the secondary side where they might cause mechanical damage.

RULES OF PRACTICE: MOTION FOR LITIGABLE ISSUES

When a licensing board directs the filing of a motion for litigable issues in order to offset a procedural advantage enjoyed by an intervenor, that motion is governed

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by the same procedural rules applicable to a motion for summary disposition, except that the intervenor has the burden of going forward. Intervenor's rights are not prejudiced because it enjoys ample opportunity to demonstrate the existence of genuine issues of fact, including the right to file a reply, under this procedure.

RULES OF PRACTICE: GENUINE ISSUES OF FACT; SEPARATE LISTING

Although the procedural rules require the filing of separate statements of genuine issues of fact in response to a motion for summary disposition, there may be no prejudice to the other parties from failure to follow this precise requirement, under circumstances where intervenor's filings specify its allegations and provide authority for them. Unless the parties are prejudiced by this technical deficiency, it is not appropriate to provide a remedy for this lapse.

RULES OF PRACTICE: SUMMARY DISPOSITION

Irrelevant contentions must be dismissed in the course of a decision on summary disposition. In an amendment proceeding concerning repair of steam generator tubes, contentions concerning the effect of steam generator tube ruptures (without establishing a basis for believing the ruptures will occur), the possibility of impermissible radiation releases, alleged dangers from pre-existing explosive plugs, and embrittlement of the reactor pressure vessel are irrelevant to the sleeving application.

RULES OF PRACTICE: SUMMARY DISPOSITION

A letter, purportedly sent on applicant's letterhead stationery by a trusted professional employee, is sufficient basis for establishing the existence of a genuine issue of fact for the purpose of summary disposition. In the absence of a direct challenge to the authenticity of the letter, intervenor need not establish the admissibility in evidence of this letter in order to prevail at the summary disposition stage.

RULES OF PRACTICE: FINDINGS OF FACT

An Atomic Safety and Licensing Board requires the filing of clearly written, logically constructed findings of fact that discuss the proper interpretation of all the testimony in light of applicable law and regulations.

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RULES OF PRACTICE: SUMMARY DISPOSITION; APPROPRIATE RELIEF

When a substantive issue survives summary disposition, the hearing should not only address the truth of that issue but should explore its implications for relief, either in the form of a license condition or denial of a license.

TECHNICAL ISSUES DISCUSSED

Eddy current testing: steam generator
Stress corrosion cracking: steam generator
Intergranular attack: steam generator
Thermal treatment of stainless steel to retard corrosion
Steam generator tube integrity
Steam generator repair
Steam generator: loose parts
Steam generator: leak before break

MEMORANDUM AND ORDER

(Concerning Summary Disposition Issues)

This decision addresses summary disposition issues arising in the context of a special motion, provided for by the Atomic Safety and Licensing Board (Board), called a Motion for Litigable Issues. In that Motion, which Wisconsin's Environmental Decade (Decade) filed on July 21, 1982 at the direction of the Board, Decade attempted to show the existence of genuine issues of fact that require a hearing in this case. Both Wisconsin Electric Power Company (applicant) and the Staff of the Nuclear Regulatory Commission (staff) filed procedural and substantive comments on Decade's motion, and Decade replied. Then, on September 9, 1982, the Board held an on-the-record telephone conference in which the parties presented oral argument related to the Motion.

It is our conclusion, for reasons stated in this memorandum, that summary disposition should be granted with respect to all issues raised by Decade except for a portion of one issue. The one genuine issue we find is the following:

> That the license amendment should be denied or conditioned because applicant has not demonstrated that eddy current testing is adequate to detect serious stress corrosion cracking or intergranular attack, in excess of the technical specification prohibiting more than 40 percent degradation of the sleeve wall, in sleeves that would be inserted within steam generator tubes.

The admitted issue, which will be set for hearing after consultation with the parties, includes our concerns about the appropriate remedy, if any, if the eddy current testing does have problems within the sleeved area. Were we to find that eddy current testing of sleeves is inadequate, we would be unable to assess the significance of that finding unless we are informed about the relationship of the inadequacy to the probability of occurrence of events of differing degrees of seriousness. Obviously, no system of measurement is perfect. Errors of measurement are to be expected. The significance of errors of measurement must be assessed in relationship to the resulting risks.

We expect the hearing to address questions concerning the reliability of eddy current testing for detecting stress corrosion cracking in sleeved and unsleeved tubes (this latter evidence is relevant to our developing an adequate understanding of the ability to detect flaws in the sleeved tubes), the reliability with which rates of corrosion may be predicted within the tube-sleeve assemblies and the changing probability, over time, of undetected defects leading to a rupture of one or more sleeved steam generator tubes that: (a) will cause one or more leaks whose combined effect is not a serious safety problem, or (b) will cause one or more leaks whose combined effect is serious either because of the accompanying risk of release of radiation or because it would cause a serious risk of leading to a full or partial core melt condition. We are interested in expert opinion on these questions and in exploring the reasons for these opinions.

I. BACKGROUND

This proceeding concerns an application to amend the operating license for the Point Beach Nuclear Plant, Units 1 and 2, to allow repair of corroded steam generator tubes by inserting within them "sleeves" that span the corroded area and reinforce the tube. A fuller description of the proposed sleeving process and of the early proceedings in this case may be found in LBP-81-55, 14 NRC 1017 (1981) at 1019-1021 (demonstration program decision). In that demonstration program decision, we authorized the use of the sleeving process in six tubes of the Unit 1 steam generator.

A. Changes in Applicant's Plans

Since the demonstration program was conducted, a few significant changes have occurred in applicant's approach to its sleeving repair project. First, applicant's experience with the demonstration program led it to abandon its plan to sleeve tubes which had previously been explosively plugged. Second, although applicant has not abandoned its request for permission to sleeve Unit 1's steam generator, it tells us that it does not plan to sleeve that generator and it has filed an

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independent request for an amendment to use an alternate repair technique on that generator, replacing all of its steam generator tubes. Third, applicant had planned to use two ways of joining sleeves to tubes; however, in part because of questions raised by staff concerning the safety of sleeve-tube joints which are brazed, applicant has abandoned all plans for use of brazing and will rely instead on mechanical joints, which also were described in its application.

B. What Is a "Motion for Litigable Issues"?

The Motion for Litigable Issues, required by the Board, is intended to parallel the Motion for Summary Disposition provided for in 10 CFR §2.749 in all but one respect, that intervenor was required to file first and to come forward with evidence indicating the existence of genuine issues of fact before applicant had to file a summary disposition motion. LBP-82-10, 15 NRC 341 (1982) at 344-345. *See also* Tr. 1182-1204 (discussion of the relationship between Motion for Litigable Issues and summary disposition). Applicant retains the burden of proof of demonstrating the absence of genuine issues of fact, just as it would if it had originated the summary disposition process by its own motion.

The need for this special procedure arose as a corollary of another procedural measure the Board took in order to expedite its decision on the request for a demonstration program. *Id.* That earlier procedural measure, which provided an advantage to Decade, was to admit a broad contention into the proceeding in order to avoid serial motions for the admission of new contentions and the accompanying Board obligation to decide those motions. However, the effect of admitting that single broad contention was that it made it difficult for applicant to determine which issues were in dispute and to prepare a motion for summary disposition until after intervenors were required to document genuine issues of fact that were in dispute. The vehicle for requiring this document was the required Motion for Litigable Issues. (Note that the Board restricted the broad latitude for filing contentions as soon as it became aware that applicant would not sleeve Unit 1 and that the previous time pressures on the proceeding were therefore alleviated. *Id.* at 346.)

Decade did not object to the procedure involving the Motion for Litigable Issues, which gave it every opportunity to present arguments about summary disposition. As part of that procedure, Decade exercised its right to respond to staff and applicant filings, and it could have buttressed its evidentiary support for its genuine issues of fact in that response.

C. Procedural Objections

Applicant and staff have attempted to show that Decade's Motion for Litigable Issues should fail for several reasons. We consider their first reason, that Decade has failed to demonstrate that its contentions have basis, to be irrelevant. In our decision of October 13, 1981, we found that several of Decade's contentions had bases. We then explained, pursuant to the authority granted to us in 10 CFR §2.751a(d) (to identify key issues and adopt a schedule for the proceeding), why we were simplifying and consolidating these contentions into a single broad contention about the safety of the sleeving project. LBP-81-45, 14 NRC 853 (1981); *see also* 10 CFR §2.752 (a)(1) (authority after a prehearing conference to simplify, clarify and specify issues). From that time until February 19, 1982, that single, broad contention defined the scope of this proceeding.

In our decision of February 19, we narrowed the single contention, limiting Decade to questions it had previously raised. Our reason for returning to more ordinary principles of procedural practice was that applicant had discontinued its plans for immediate work on Unit 1 and that special, expedient procedures were no longer appropriate. LBP-82-10, 15 NRC 341 (1982) at 346.

Having reached the legal conclusion that Decade need not at this stage of the proceeding show that it has a basis for contentions raised before February 19, we are confident that our conclusion has very little impact on this proceeding. The standard for admitting contentions is not overly difficult to meet. It is a standard which governs whether or not an issue shall be subject to discovery. However, the period of discovery has expired. Now we are concerned with whether issues shall be admitted to trial. So we apply the more rigorous, evidentiary standard of whether genuine issues of fact shall be set for trial. *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant Units 1 and 2), ALAB-443, 6 NRC 741 (1977) at 753-754. We believe that any issue that meets the "genuine issue" test necessarily would meet the basis test and that we do not, therefore, need to give separate consideration to the basis requirement.

D. Filing of Genuine Issues of Fact

Another procedural point raised by applicant is that Decade has not met the formal requirements that it file a separate statement of genuine issues of fact and that it also meet the requirement that each genuine issue of fact be demonstrated through admissible evidence. *See* 10 CFR §2.749. However, as the decision in *Perry* indicates, even if these deficiencies were found to exist, the appropriate remedy is far from clear. In *Perry*, applicant was given an opportunity to cure the noted procedural defects. *Perry* at 757.

We regret that Decade did not comply to the letter with the requirement that it provide us with a separate, distinct statement of genuine issues of fact. Such a statement would have clarified its case, simplified the tasks of the other parties and the Board, and focused our attention on the points Decade seeks most to make. However, applicant had an opportunity during the September 9, 1982 telephone conference to obtain clarification of the issues. Furthermore, applicant informed us at the conclusion of the telephone conference that it did not require any further opportunity to reply to Decade's allegations. Tr. 1204, 1336-1337. Hence, we conclude that however unclear Decade's statement may have been that applicant and staff have not been prejudiced.

We are therefore able to advance to square one of our consideration of the substantive issues raised by the Motion for Litigable Issues. We will address other pending procedural points, if relevant, only after considering the substantive concerns of the parties.

E. Applicable Regulations

Although none of the parties has informed us which regulations are applicable to this proceeding, we have investigated this matter and informed ourselves of the correct legal context in which to decide the pending issues. We find that 10 CFR §50.40 and §50.55a (particularly §50.55a(b)(2) (iii), (d) and (g)) and 10 CFR Part 50, Appendix A, *Criterion 14*, are relevant. We consider *Criterion 14* controlling, requiring that:

> The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.

Under this standard, which applied to the original steam generator tubes and should apply to the sleeving repair, we must deny the summary disposition of any genuine issue of fact concerning whether the sleeving procedure complies with the three criteria to which the phrase "extremely low probability" applies.

This decision does not address the effect on this proceeding of specific sections of codes and standards. We will require briefs on that subject, primarily because applicable sections may affect our consideration of the relationship between testing and the actual risks of tube failure.

II. THE "CONTENTIONS"

Under the procedure we adopted, Decade was free to pursue issues raised by it prior to October 13, 1981. Decade also was under a continuing obligation to keep applicant informed of the basis for its contentions, since applicant had served on it an interrogatory requesting the basis for contentions. Tr. 890. Under the circumstances, it would have been helpful for Decade to have argued its Motion for Litigable Issues by employing language previously used by it in framing contentions and issues and then to have explained which genuine issues of fact allegedly exist under each contention. This is the ordinary way parties approach summary disposition, but it is not the way Decade approached that stage of our proceeding. Instead, Decade chose to reframe many of its contentions, using new language

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drafted by it for its Motion for Litigable Issues. In this section, we will adopt Decade's usage without first deciding whether each issue had been properly raised. We assume, for the sake of argument (and consideration) that each point Decade raises has been raised legitimately; and we discuss whether a genuine issue of fact has been raised under each of the allegedly litigable issues.

A. Irrelevant Issues

Decade's allegedly litigable issues 1, 2, and 4, and its "alternative litigable issue" do not relate to the safety of tube sleeving and are irrelevant to an application for a license amendment concerning steam generator tube sleeving. These alleged issues are relevant to tube sleeving only if tube weakening is assumed to have occurred. Issue 1 states that degradation of but one to ten steam generator tubes could exacerbate a loss-of-coolant accident (LOCA). Issue 2 states that tube ruptures could lead to impermissible radiation releases. Issue 4 states that pre-existing explosive plugs, that have been used to seal partially degraded steam generator tubes in order to comply with technical specifications imposed by the NRC, could rock loose in a LOCA (although they never have before, *see* Tr. 1318-1319) and could exacerbate tube-failure incidents. *See* Tr. 1320 (Decade admits lack of direct relevance of this contention). The "alternative litigable issue," concerning reactor vessel embrittlement, was previously excluded by us as irrelevant. LBP-82-33, 15 NRC 887 (1982) at 890-891.

This is not an application to build or operate a nuclear power reactor. In an amendment proceeding, the relationship of steam generators to the remainder of the plant is not germane. In this case, applicant already has an operating license, granted after the safety of its reactor was considered. We do not think it appropriate to permit an intervenor to question the original design of the reactor or the systems not directly involved in this application, on the unexplained premise that they are somehow related to the steam generator. LBP-81-45, 14 NRC 853, 858 (1981) (rejecting a previous version of contention 1 as irrelevant to the proceeding because it is an allegation of the consequences of tube failure which may be litigated only if a mechanism for tube failure is shown to exist). The test of relevance we have applied is to ask whether an issue is relevant to "how the *sleeving* program would cause problems" or whether it reflects "unfavorably on the safety of *sleeving*." [Emphasis in original.] *See* LBP-82-33, 15 NRC 887 (1982) at 890-891; LBP-81-55, 14 NRC 1017 (1981) at 1026 (citing Tr. 598).

B. Third Litigable Issue

Decade's third litigable issue contains five listed reasons that Decade believes:

> The process of sleeving steam generator tubes increases the probability of tube failures generally, and, of even greater significance, it substantially

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> increases the risk of failures in the unconstrained free standing region of the steam generator. . . .

Thus, in the preface to this issue, Decade recognizes the criterion that we have asserted must be met in order to demonstrate relevance to an amendment authorizing a tube sleeving repair project.

We note that applicant seems to have suffered confusion about the meaning of "unconstrained free standing region" in this contention. Licensee's response at 26-27. However, the Board has never had difficulty understanding Decade's use of this language. In the sleeving demonstration decision, we interpreted Decade to be alleging:

> that there is a new potential for a problem of tube rupture because the sleeve spans an area above the tubesheet and if the sleeved tube were to collapse there would be no constraining effect from the tube sheet. Tr. 408-409.

LBP-81-55, 14 NRC 1017 (1981) at 1027. This is the meaning Decade continues to intend. Tr. 1236-1237, 1250. It is concerned that in the present configuration, degradation of steam generator tubes occurs primarily within the tubesheet, although there may be some degradation through corrosion in the sludge area above the tubesheet. Staff's Safety Evaluation, July 8, 1982 (SER) at 22; Statement of W. D. Fletcher, attached to Licensee's Response (Fletcher Affidavit) at 10-11. Furthermore, intergranular attack (IGA) apparently has occurred in the similar San Onofre steam generator in the region of the upper-sleeve expansion joint, which is substantially above the tubesheet. *See* Affidavit of Emmett L. Murphy, attached to NRC Staff Response to Decade's Amendment to Motion Concerning Litigable Issues, September 3, 1982, at 2; *see also* Licensee's Response to Decade's Amendment to Motion Concerning Litigable Issues, August 24, 1982 at 8-9.

To the extent that corrosion occurs beneath the top of the tubesheet, a ruptured tube would be constrained by the tubesheet, thus limiting leakage. Fletcher Affidavit at 3. However, were a rupture to occur through undetected corrosion or intergranular attack in the sleeved area that is above the tubesheet, an unconstrained break — with greater leakage than would otherwise be expected — could occur.

In the remainder of this portion of our memorandum we will consider the subissues on which Decade relies to establish a genuine issue within this contention.

1. Inspectability and Corrosion

a. The Contention

Decade has alleged that there are a variety of reasons that eddy current inspection of the tube sleeve assembly will be more difficult than eddy current inspection

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of existing tubes. It also has alleged, in a matter that is so intimately interrelated that we will analyze it together with the inspectability allegations, that there will be unacceptable corrosion in the tube-sleeve annulus, including corrosion above the tubesheet, where a potential rupture would not be leak-limiting because the tube would not be constrained by the tubesheet. It states that:

> Present inspection methods [understood to be limited to eddy current testing, Tr. 1237-1238] in unsleeved tubes have been shown to be inadequate to detect defects, and the complicating presence of the sleeve inside the tube will make the detection of degradation, especially at the joints, even more difficult. Over time, the detection capability will continue to degrade. Scaling will occur on the outer surface of the sleeve inside those tubes with through-wall defects because the all-volatile water chemistry treatment used in lieu of phosphate chemistry can no longer maintain the secondary water completely free of solids. In the narrow confines of the crevice-like annulus, the rate of scaling will be accelerated by concentration effects beyond any scaling on the outside of the tubes in the free standing region where there is no crevice. Combined with the scaling will be other conductive impurities from the feedwater train and elsewhere that are also an unintended byproduct of all-volatile treatment and that will further degrade and confuse the eddy current signal. The inability to adequately detect defects that can lead to primary-to-secondary or secondary-to-primary pathways for leakage will exacerbate the problems indicated in [the other subissues in this allegedly litigable issue]. . . .
>
> * * *
>
> The annulus between the original tube and the sleeve may give rise to a corrosive environment in the unconstrained free standing region of the steam generator [*i.e.*, the region above the tubesheet. Tr. 1249-1250] in cases where the original tube is or may be suffering in the future from a through-wall crack permitting secondary water impurities (including copper and iron oxides from the feedwater heaters that are an unintended byproduct of the conversion to all volatile treatment) to seep into the narrow space and concentrate to eventually corrode the sleeve as well.

We present these two Decade contentions in their entirety to indicate their general flavor. Although Decade has never clearly related each portion of this text to specific evidentiary support, there is substantial detail in these allegations. Furthermore, the subcontention is followed in its motion by some quotations of primary sources which are not overly long, thereby permitting the parties to be on notice of Decade's evidentiary support. We have found this form of filing to be more difficult to analyze than we would like, but we do not think that staff or applicant were unfairly kept in the dark about what was being alleged.

b. Conclusion

Each of our conclusions is for the purpose of summary disposition only. Conclusions indicate that there is a genuine issue of fact and do not indicate our views concerning the preponderance of evidence.

We find that corrosion continues to be a problem within the Point Beach steam generators. Although the corrosion problem has been reduced by the conversion of secondary-side chemistry to all-volatile treatment, this has not eliminated the corrosion problem. Staff's Safety Evaluation, July 8, 1982 (SER) at 22. *See also* Decade Attachment IIID: Letter of February 2, 1982, from G. H. Neils, General Manager, Headquarters Nuclear Group, Northern States Power Company to Mr. Sol Burstein, Executive Vice President, Wisconsin Electric Power Co. (Neils letter). (We note that the Neils letter, without authentication, could not be admitted into evidence; but applicant, purportedly its recipient, has not challenged its authenticity so we are willing to accept it in support of the existence of a genuine issue of fact. Decade will need further basis to have the letter admitted in evidence at the hearing.)

Because corrosion is a problem, non-destructive testing is a helpful way of detecting corrosion before it exceeds the 40 percent through-wall corrosion plugging-limit found in the technical specifications. For this purpose, an important test relied on by the nuclear power industry is eddy current testing. However, Decade offers a relevant letter from D. K. Porter, whom applicant called to testify at an earlier stage of this proceeding, LBP-81-55 (1981) at 1026, and applicant does not question the authenticity of that letter. Tr. 1184-1185; *see also* 10 CFR §2.749 (the answer to a motion for summary disposition may be served "with or without affidavits").

The Porter letter, Decade Attachment IIB, is addressed to Mr. Peter Anderson, of Decade, and is dated February 28, 1980. The letter indicates that neither in-plant nor laboratory eddy current testing was effective in detecting stress corrosion within the tubesheet region of up to 33 percent of the wall of a particular tube (Tube 20-73). *Compare* SER at 31 (in the tubesheet region, Westinghouse believes that a more favorable signal-to-noise ratio for sleeved tubes will provide a higher degree of inspectability than for non-sleeved tubes.)

The Porter letter explains that eddy current testing is not effective in detecting stress corrosion that occurs in unsleeved tubes within the tubesheet because in that region forces external to the tube keep it from expanding under internal pressure and keep the metal grains that have been affected by the corrosion in physical and electrical contact with each other. *Id.* at 2. There is a genuine issue of fact concerning the validity of this rationale or its applicability to the sleeve-tube annulus. There is no evidence in the record concerning the ability of eddy current testing to detect stress corrosion or stress corrosion cracking in the sleeve. Applicant's counsel has suggested that the annulus between the sleeve and tube

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would permit expansion, thus causing separation of grain boundaries and making detection of stress corrosion cracking in the sleeve analogous to detection in an unsleeved tube, where internal pressure would permit the metal grains to separate, physically and electrically. Tr. 1282-1283. However, we do not know of any expert testimony concerning the likelihood that the tube would press on the sleeve in enough locations — such as when passing through the tubesheet, in areas where corrosion may accumulate in the annulus, or at the upper and lower joints — to prevent the separation of metal grains in one or more areas of the sleeve. This problem also may apply both to stress corrosion cracking and to intergranular attack. *See* SER at 26.

We are also concerned that even if the sleeve is as inspectable as any unsleeved tube, the staff's conclusion concerning the effectiveness of eddy current testing is based on calibration notches and not on tests using samples containing stress corrosion cracks or intergranular attack. SER at 31. Hence, we have no direct evidence on the reliability with which eddy current testing can detect these small volume defects. Furthermore, there are no data (other than unsupported opinions) in the record concerning the reliability with which eddy current testing can be used *in conditions comparable to field conditions*, by trained operators, to detect stress corrosion cracking, intergranular attack, or other kinds of defects even in unsleeved tubes. All the data relate to the *capability* of the technique under laboratory conditions and there is, therefore, a genuine issue of fact about whether the technique may reliably be used to detect flaws of varying depth and differing types, possibly leading to single or multiple tube failures in either sleeved or unsleeved tubes. SER at 33-34; Timothy Colburn, staff manager for Point Beach, at Tr. 1268-1271; *see also* Tr. 1272-1280, SER at 6 (the source of a small leak on the non-sleeved side could not be identified with eddy current testing). *Compare* Fletcher Affidavit at 11.

That we consider the reliability of eddy current testing to be a genuine issue of fact is not idle curiosity. There is a technical specification imposed on Point Beach, that would be applicable as well to sleeved tubes, that tubes (or sleeves) suffering through-wall degradation of 40 percent or more must be plugged. SER at 21. *Compare* ASME Boiler & Pressure Vessel Code, Section XI, Division 1, IWB-3521.1, IWA-2233 and Appendix IV. These limits have been set after considering the strength of the partially degraded tubes, and there is no evidence in our record concerning the reliability of eddy current testing (or any other test that is employed) to detect 40 percent through-wall degradation. Tr. 1281-1284. *See also* NRC IE Information Notice No. 82-39, "Service Degradation of Thick Wall Stainless Steel Recirculating System Piping at a BWR Plant" (serious degradation of thick wall pipes was not previously detected by an inservice inspection program that apparently exceeded ASME code requirements).

A possible defense to these testing difficulties is applicant's argument that tubes of thermally treated Inconel 600, which is the material used for the sleeves, are so much more resistant to corrosion than were the original steam generator tubes that reliable testing is not necessary. SER at 23. In addition, it may be that corrosion of the tube will be retarded by sleeving because of reduced heat transfer at the sleeve location. Murphy Affidavit (attached to Staff Response) at 4. However, we do not know whether applicant or staff is prepared to argue that adequate non-destructive testing is not necessary, under the regulations, for the safety of the sleeved tubes; and there is no analysis or empirical evidence in the record concerning the expected rate of corrosion and the expected variance in that rate. Consequently, we do not know the amount of time which may safely be expected to pass before corrosion of sleeves may become a safety problem or may cause one or more tubes to approach the 40 percent plugging limit. *See* Fletcher Affidavit at 8 (eddy current inspections are not necessary).

The result of a fish-mouth or circumferential rupture in the sleeve, if it occurred above the top of the tubesheet, could be serious, particularly if other tubes ruptured simultaneously. Ruptures above the tubesheet would not be constrained or limited by surrounding structures, as might ruptures below the top of the tubesheet or defects in the upper mechanical joint. If a sleeve ruptures, the surrounding tube cannot be counted on to constrain the ruptured sleeve because the tube would have suffered serious corrosion even before the insertion of the sleeve and would be further degraded by the time a sleeve might rupture. In the case of a circumferential rupture, the damaged tube might even cause mechanical weakening of surrounding tubes, contributing to their failure.

On the other hand, we find the defense that leaks are self-limiting to be satisfactory when applied to potential problems of corrosion in the area of the upper joint. Were corrosion to occur in that area, Decade has said that eddy current testing would have some difficulty in detecting it, citing the SER at 32. However, staff has responded by stating (without contradiction from Decade) that the sleeve extends far enough beyond the upper joint to constrain any rupture at the joint so that there would be a leak of no more than 12.5 gallons per minute, which is far less than the leakage that might cause critical overheating of fuel. Murphy Affidavit at 4. Consequently, we find that there is no genuine issue of fact concerning the inspectability of the upper mechanical joint.

Staff also relies on leak limits to detect flaws before ruptures occur. *Id.* at 3. However, leaks occurring due to stress corrosion cracking may result when only a single portion of an extensive crack penetrates through the tube wall. There is a genuine issue of fact about whether leak detection will provide protection from ruptures caused by rapid crack propagation along a weakness created by stress corrosion cracking, originating at or near the site of a small leak. Because through-wall leaks are a problem caused by a progressive condition, corrosion, we are not satisfied by staff's assurance that past experience with operating steam generators provides empirical support for the proposition that leaks will reliably precede cracks. Generically, the frequency of stress corrosion, through-wall

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cracks may be expected to increase with the amount of operating experience with steam generator tubes that are exposed to corrosion and, consequently, past experience may be a poor indicator of the potentially increasing magnitude of this problem.

We conclude that there are genuine issues of fact concerning the adequacy of eddy current testing in the sleeved region. This issue was raised by Decade in a timely fashion. Letter from Peter Anderson to Mr. Richard G. Bachman, January 18, 1982 at 2 (¶(5)); *see also* LBP-81-44, 14 NRC 850 (1981) at 857-858. Since the fact relied on by Decade consisted of a letter written by a reliable professional employee of the applicant, presumably with applicant's knowledge, we do not think that applicant was unduly prejudiced because Decade did not update its answer to applicant's interrogatories before filing its Motion for Litigable Issues. Additionally, we see no reason to believe that the failure to update answers was willful. Decade has told us that almost all its work on this case has been done by Peter Anderson, who wrote its Motion for Litigable Issues in the couple of days before it was submitted. We know of no reason to believe that Mr. Anderson had previously decided to rely on the Porter letter, which now is crucial, but had accidentally or intentionally concealed this decision.

Although there are genuine issues of fact within this contention, we see no basis in fact for several other portions of this contention. There is no reason to believe that there will be "concentration effects" in the tube-sleeve annulus (*see* Colburn Affidavit at 6), that sleeving "increases the probability of tube failures generally" or that "other conductive impurities from the feedwater train . . . will further degrade and confuse the eddy current signal." Consequently, we find that these are not genuine issues of fact and exclude them from consideration at the hearing.

Our concern is limited to possible deficiencies in the use of eddy current testing to assure the integrity of sleeves. A discussion of the specific issues to be tried may be found in the introductory portion of this memorandum.

2. *Quality Assurance and Expansion of Sleeve in Tube*

Decade raised questions about the adequacy of quality assurance with respect to the sleeving demonstration program. LBP-81-55, 14 NRC 10-17 (1981), 1030-1032. We found that these questions were without merit.

Now applicant has filed extensive evidence concerning the way the sleeving tasks will be accomplished and how the work will be inspected before the steam generator is returned to service. Fletcher Affidavit at 14-22. In addition, Decade had the opportunity to attempt to uncover damaging information about the way in which the sleeving demonstration program was conducted. LBP-82-33, 15 NRC 887 (1982) at 891-892. Nevertheless, Decade continues to rely on alleged deficiencies in the San Onofre sleeving project.

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We do not consider the evidence on the San Onofre project to be sufficient to raise a genuine issue of fact about either quality assurance or the under- or over-expansion of sleeves within tubes.

C. Loose Parts from Steam Generator Repair

Decade has alleged that loose parts left behind from steam generator repair work may cause dangerous steam generator tube ruptures. (Fifth Litigable Issue.) However, applicant assures us (without contradiction from Decade) that none of the planned work will take place on the secondary side of the steam generator, where loose parts might be left. Furthermore, we are assured by applicant, on the record, that the application describes the sleeving process in detail and that under no circumstances could any secondary side work be performed under this application. Tr. 1328-1329. Consequently, there is no way that approval of this amendment could lead to loose parts being left in the steam generator and there is no genuine factual dispute about this issue. If secondary side work were done, it would appear to increase the probability of occurrence of an accident or malfunction that has not been evaluated in the safety evaluation report; hence, prior Commission approval would appear to be necessary. *See* 10 CFR §50.59(a)(1).

D. Expansion Joint in Corroded Area

Decade amended its Motion for Litigable Issues to raise a question concerning the safety of an expansion joint that might be formed in a corroded area of a tube. It based its contention on an event that occurred at the San Onofre power reactor in which sleeves were found to have been expanded into tube areas in which intergranular attack (IGA) was present. NRC Staff's Answer to Decade's Interrogatories Relative to the Safety Evaluation Report on Full Scale Sleeving, August 6, 1982, at 6.

However, it has been the consistent position of both applicant and staff that problems in the upper expansion joint can result only in very limited leaks. The staff's position, which has not been rebutted by Decade, is that the sleeve extends far enough beyond the upper joint to constrain any rupture at the joint so that there could be a leak of no more than 12.5 gallons per minute, which is far less than the leakage that might cause critical overheating of fuel. Murphy Affidavit at 4. Consequently, we find that there is no genuine issue of fact concerning the weakness of an upper mechanical joint that might be formed in an area of a steam generator tube that has been subject to intergranular attack.

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III. PROCEDURES

We will consult with the parties before setting hearing deadlines, including deadlines for the filing of direct testimony and a deadline for the simultaneous filing of findings of fact and conclusions of law, followed by a 10-day period for simultaneous responses. We request the parties to conform their filings to the suggestions recently given to parties by the Licensing Board's order of September 16, 1982, which we attach for the information of the parties.

IV. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 1st day of October, 1982,

ORDERED

(1) That a hearing shall be held on the following issue: That the license amendment should be denied or conditioned because applicant has not demonstrated that eddy current testing is adequate to detect serious stress corrosion cracking or intergranular attack, in excess of the technical specification prohibiting more than 40 percent degradation of the sleeve wall, in sleeves that would be inserted within steam generator tubes.

(2) That summary disposition is granted with respect to every other issue in this case.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Hugh C. Paxton
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, ***et al.***
Perry Nuclear Power Plant,
Units 1 & 2) **September 16, 1982**

MEMORANDUM AND ORDER
(Concerning Scheduling)

In the interest of efficient management of this proceeding, the Board invited the parties' suggestions for scheduling. Ohio Citizens for Responsible Energy (OCRE), Sunflower Alliance Inc., *et al.*, Cleveland Electric Illuminating Company, *et al.* (applicant), and the Staff of the Nuclear Regulatory Commission (staff) have each filed their suggestions. Applicant favored commencement of the evidentiary hearing on December 1, 1982 and allowed no time for the filing of motions for summary disposition. Intervenors, who provide time for the filing of motions for summary disposition, both suggested that the hearing begin in May 1983.

Staff's proposal, which we have adopted with modifications, is a compromise between applicant and intervenors. It provides for motions for summary disposition but takes an optimistic view concerning completion of discovery. In adopting this proposal, we recognize that we are merely adopting targets that may help to focus our efforts. Should intervening circumstances require, these targets may be adjusted, by motion.

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We adopt the following schedule:

EVENT	TARGET DATE
Complete discovery on Issues 3-7	September 30, 1982
Complete discovery on Issues 9, 11	October 15, 1982
Complete discovery response on 3-7	October 29, 1982
Complete discovery response on 9, 11	November 15, 1982
Motions for summary disposition on 3-7	November 15, 1982
Motion for litigable issues, QA	November 15, 1982
Motions for summary disposition on 9, 11	December 1, 1982
Answers to summary disposition on 3-7	December 10, 1982
Answer to motion for litigable issues, QA	December 10, 1982
Answers to summary disposition on 9, 11	December 27, 1982
Board ruling on summary disposition	January 17, 1983
Direct testimony filed	January 31, 1983
Commencement of hearing	February 15, 1983

The adopted schedule does not provide for a prehearing conference, despite OCRE's suggestion that one be held. However, the schedule may be modified if a party moves, prior to December 27, 1982, to hold such a conference and buttresses its motion with suggestions for the objectives of the conference.

FORM OF FILINGS

The Board urges the parties to consider how to make summary disposition motions, motions concerning litigable issues, and post-hearing filings most useful as instruments to persuade and assist the Board.

It is our job to examine each admitted contention or each admitted genuine issue of fact that survives summary disposition in light of the applicable law, including statutes and regulations and the applicable regulatory materials, including guides and NUREGs. Next, we must analyze the facts of record in light of those materials and the relevant arguments of the parties. At the summary disposition stage, we must determine whether genuine issues of fact exist. At the initial decision stage, we must determine whether applicant has met the burden of proof with respect to each of the issues admitted into the proceeding.

We urge the parties to make clear, thoughtful filings that comply with the regulations and demonstrate the logical process the party hopes the Board will adopt. This requires careful attention to each fact of record, including providing assistance to the Board in considering facts that appear to be adverse to the party's position. Consideration should be given to conceding, where appropriate, that the facts do not support the party. Arguments that ignore some of the facts will lack persuasiveness or, if they lead the Board into error, will expose the party to reversal on appeal.

Subsequent to trial, findings and conclusions should *not* be submitted in numbered form. The Board prefers writing decisions (and receiving findings and conclusions) organized in outline form, discussing the contentions, the law, the positions of the parties, the relevant facts and the conclusions, including license conditions that may have been shown to be necessary. You may suggest one or more consistent lines of reasoning by which the conclusion you favor may be reached. You may also refute the other party's suggested lines of reasoning. You may also suggest specific license conditions or argue against conditions you oppose.

Citations to cases should analyze the relevance of the cases. Reliance on dictum should be disclosed clearly. If a case is relied on for a holding, discuss the facts of the case and how the principle you distill from the case was relevant to the issues pending before the court. Only cite strings of cases if each is relevant. The Board may disregard string citations if early cases in the string are not relevant.

Findings on different contentions will be simultaneously filed pursuant to a phased schedule that will be adopted after the Board has been advised by the parties of their preferences. The phased schedule will provide for one or two of the sets of simultaneous filings to precede the schedule suggested in the regulations. Other filings will exceed the suggested time schedule, thus allowing greater care in preparation. Every party may respond to the filings of the others, within 10 days of filing of the findings of the other party.

We urge the parties to exercise self-discipline. Motions for summary disposition should be filed only with respect to issues or parts of issues that the movant believes are not in genuine dispute. Similarly, motions for litigable issues should be filed only if the movant believes that there is a genuine issue of fact with respect to each such issue. (The motion for litigable issues is analogous to the *answer* to a motion for summary disposition and shall be treated as such under the regulations. The response to such a motion is in the nature of a motion for summary disposition, and shall be treated as such; however, the response need only address the issues raised in the motion for litigable issues.) Issues thought not to be in genuine contention should be clearly set forth, together with the basis supporting the statement that there is no genuine issue. Opposition to such motions also should be made on a clear, point-by-point basis, stating each genuine fact and its record support. At this stage, genuine facts must be *evidentiary* — in a form that is admissible at trial.

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We also urge the parties to continue and improve upon their efforts at constructive cooperation. It is understandable that advocates will on occasion be unable to reach compromises; but compromise can help to narrow the issues and assist the Board and the parties to concentrate on truly important issues rather than spreading their efforts thinly over many issues that no one considers truly important. If the parties wish, the Board would attempt to assist in discussions aimed at narrowing or eliminating issues.

NOTICE

The Board wishes to call to the attention of the parties the following recently published article: Thomas H. Pigford, "The Diagnostics of Nuclear Safety," 25 *Nuclear News* 54 (September 1982).

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 16th day of September, 1982,

ORDERED

(1) The Board adopts the schedule set forth in the accompanying memorandum;

(2) The Board adopts the procedural guidance given to the parties in the accompanying memorandum.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 1355 (1982) LBP-82-89

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*
(Perry Nuclear Power Plant,
Units 1 & 2) **October 6, 1982**

When applicant objects to the admission of a late-filed contention, intervenors may file a response. This response should not, however, be an excuse for omitting necessary materials from the initial filing of the late-filed contention. If intervenors raise new issues in their response, the applicant should have an opportunity to respond to those.

RULES OF PRACTICE: LATE-FILED CONTENTIONS

Intervenors should be permitted to respond to applicant's objections to their late-filed contentions. Applicant may respond to new material found in the response.

RULES OF PRACTICE: NEW MATERIAL

When a party introduces new material into a filing, opposing parties should have an opportunity to comment on the new material.

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MEMORANDUM AND ORDER
(Concerning Procedures for Late-Filed Contentions)

On September 13, 1982, Cleveland Electric Illuminating Co., *et al.*, (applicant) filed a motion that, in essence, requested reconsideration of our Order of August 4, 1981. That Order related to the procedure to be followed when intervenors file late contentions. It *required* intervenors to respond to applicant's arguments that their motions to admit late-filed contentions should be denied.

Applicant now requests, based on its recent experience with this procedure, that intervenors no longer be *permitted* to respond in writing to its motions concerning their late-filed contentions. It claims that intervenors have abused this process by filing unexpected material in their reply pleadings, depriving applicant of the opportunity to respond to this new material. Intervenors Sunflower Alliance Inc., *et al.* and Ohio Citizens for Responsible Energy have joined in opposition to this motion. The Staff of the Nuclear Regulatory Commission (staff) supports applicant's motion, to the extent that it favors prohibiting intervenors from using their reply to introduce new material.

We find applicant's argument to be without merit. We are governed by Houston Lighting and Power Company (Allens Creek Nuclear Generating Station, Unit 1), ALAB-565, 10 NRC 521 (1979), which deals with this subject extensively and appears to prohibit us from adopting the principle urged upon us by applicant. The Appeal Board said, in a somewhat tentative voice:

> Before any suggestion that a contention should not be entertained can be acted upon favorably, the proponent of the contention must be given some chance to be heard in response.[footnote omitted.]

Id. at 525. Despite the advisory nature of the Appeal Board's conclusion, we agree with it.

The decision on the admission of a contention is a crucial part of the case. Before a contention is excluded from consideration, the intervenor should have a fair opportunity to respond to applicant's comments. If applicant challenges the basis for a late-filed contention, the rationale of *Allens Creek* seems to be directly applicable. In addition, although *Allens Creek* is directly applicable only to the filing of timely contentions, we believe its implications are far reaching. When an intervenor files a late contention and argues that it has good cause for late filing because of the recent availability of new information, intervenor should have the chance to comment on applicant's objection that the information was available earlier. The Board needs to know intervenor's views about the previous availability of information on which intervenor relies to show cause for late filing. The best source of this information is the party directly affected by the argument.

We therefore conclude that intervenors should be permitted to reply to the opposition to the admission of a late-filed contention. Since intervenors do not challenge our order *requiring* them to file such replies, we need not reconsider our decision to require those replies.

RELEVANCE

We note that applicant and staff argue that the prevailing procedure permits intervenors to file bare-bones pleadings and to spring new arguments on the unsuspecting applicant. However, applicant's motion was filed prior to our decision concerning Sunflower's Late-Filed Radiation-Dose Contention. LBP-82-79, 16 NRC 1116 (1982). In that decision, we discussed some "surprise statements of cause for late filing" and concluded that there was no good cause found in those surprise statements. Had we found that good cause had been shown in those filings, we would have provided applicant a chance to respond. The principle that a party should have an opportunity to respond is reciprocal. When applicant raises legal and factual issues in its response, intervenors may respond to those. When intervenor introduces material that is entirely new, we will permit applicant to respond. Due process requires an opportunity to comment.

We agree with the staff that intervenor's reply should not be an opportunity to assert new bases for late-filed contentions. Intervenors are now experienced in what is expected of them. Their initial filings, which often have been of high quality, are expected to contain their best arguments and factual support for their contentions. While they may respond to applicant's challenges, their response should be more by way of explanation than of new evidence or entirely new lines of argument.

If intervenors find that they must make new factual or legal arguments, they should clearly identify this new material and give an explanation of why they did not anticipate the need for this material in their initial filing. If this explanation is satisfactory, the material may be considered; but applicant will be permitted to respond.

We will permit intervenors to respond fully concerning the admissibility of their contentions, but we will not permit the opportunity to reply to be abused. As staff has pointed out, an overly liberal use of the opportunity to reply would be tantamount to permitting intervenors to refile late-filed contentions without showing good cause for late refiling.

It is our opinion that the reply procedure used in this case has worked well. It has been helpful to the Board in deciding the appropriateness of admitting contentions. *See* LBP-82-79, 16 NRC 1116 (1982) at 1117, 1118. Although the procedure has occasionally assisted the Board in excluding contentions, intervenors have not objected to its use. By permitting the Board to be fully informed before deciding whether to admit contentions, the procedure has helped the Board to reach appropriate decisions about the admission of contentions. In particular, it has

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helped the Board to admit contentions of potential safety and environmental importance and to exclude contentions that have no basis, in light of the documents already on file in this case.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 6th day of October, 1982,

ORDERED

(1) Intervenors shall comply with the procedures governing late-filed contentions that are announced in the accompanying memorandum.

(2) In all other respects, Cleveland Electric Illuminating Co., *et al.*'s September 13, 1982 Motion to Revise Procedures for Late-Filed Contentions is denied.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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Cite as 16 NRC 1359 (1982) **LBP-82-90**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2) **October 8, 1982**

The Licensing Board admits a late-filed contention concerning inadequate consideration of economic consequences of accidents. The contention's basis was found in a recently published study that employed input-output analysis to estimate the effects of a possible nuclear accident at the Perry Nuclear Power Plant. Because this appeared to have been the first time such an analysis had been employed, and because the use of the analysis might require amendment of a portion of the Final Environmental Statement, it was considered to contribute to good cause for late filing.

RULES OF PRACTICE: LATE-FILED CONTENTIONS

The use of a new technique for the economic modelling of nuclear accidents may furnish good cause for late-filing of a challenge to the treatment of economic costs of accidents in the Final Environmental Statement.

TECHNICAL ISSUES DISCUSSED

Costs of nuclear accidents (use of input-output analysis)
Input-output analysis of costs of nuclear accidents

MEMORANDUM AND ORDER
(Concerning Economic Cost Contention)

On August 9, 1982, Ohio Citizens for Responsible Energy (OCRE) moved for permission to late-file a contention concerning "Inadequate Consideration of Economic Consequences of Accidents" in the Draft Environmental Statement (DES) for the Perry Nuclear Power Plant (Perry). Since the relevant sections of the Final Environmental Statement (FES), which has since been issued, are similar to the DES, we will consider the contention to relate to the FES.

This is a late-filed contention that must meet the requirements concerning good cause for late filing. 10 CFR §2.714(a)(1). However, largely because OCRE relies on a recently published study (NUREG/CR-2591) as the basis for its contention, we have determined that this requirement is met. We discuss our reasons for this determination below.

The regulatory requirement that most directly affects the validity of this late-filed contention is the Statement of Interim Policy, "Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act," 45 *Fed. Reg.* 40101 (June 13, 1980). The Statement requires:

> Events or accident sequences that lead to [radioactive] releases shall include but not be limited to those that can reasonably be expected to occur. . . . Socioeconomic impacts that might be associated with emergency measures during or following an accident should also be discussed.

Id. at 40103.

OCRE contends that the FES is deficient because it failed to include an assessment of the economic and societal disruption which would occur as a result of an accident at Perry. It uses NUREG/CR-2591, "Estimating the Potential Impacts of a Nuclear Reactor Accident," prepared by the Department of Commerce for the Nuclear Regulatory Commission, to establish that there is available a systematic method for evaluating economic and social disruption and points out that the relevant section of the FES, §5.9.4.1.4.4, gives only a cursory description of the economic impacts of accidents. (Unlike the Cleveland Electric Illuminating Co., *et al.*, (applicant) we do not consider OCRE's contention to relate only to the failure of the FES to consider the single accident scenario reviewed in NUREG/CR-2591. We interpret OCRE as intending us to consider whether that document

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provides: (1) a method that should be used, and (2) one example of the use of that method.)

Our review of FES §5.9.4.1.4.4 persuades us that OCRE is in error when it asserts that only a "cursory" treatment has been given to economic consequences of serious accidents. The section describes the use of a complex model to generate a probability/consequence function, presented in Figure 5.8, "Probability distribution of mitigation measures cost."

However, neither the challenged section nor the filings of the parties shows that a satisfactory method of considering indirect economic effects, similar to that used in NUREG/CR-2591, was used or even considered. As applicant has pointed out, the approach used in the FES is different from that of the NUREG/CR, which estimates economic effects by using an input/output rather than a direct-cost approach. Applicant's Answer to OCRE Motion for Leave to File Its Contention 20 (August 31, 1982) at 7. As OCRE pointed out in its response, the NUREG/CR "analyzes important factors not considered in the [F]ES, *e.g.*, the effect on the larger American economy (in terms of lost vital industries)." OCRE Response at 4.

It is a possible implication of OCRE's contention that the entire probability/cost function in the FES's Figure 5.8, "Probability distribution of mitigation measures cost," should be moved upward and to the right (higher costs at each level of probability) because economic effects such as unemployment have not been properly considered. We have no way of knowing how far the curve might need to be moved, and we therefore do not know how much effect this consideration might have on the overall cost/benefit balance concerning the operation of Perry. (This lack of information also prevents us from following applicant's suggestion and merely amending the FES to accommodate OCRE's contention. Applicant's Answer at 14.)

GOOD CAUSE FOR LATE FILING

Both the Staff of the Nuclear Regulatory Commission and the applicant contend that the DES was issued in March 1982 and that the DES's alleged failure to consider economic effects should have been apparent to OCRE at that time — prior to the issuance of the NUREG/CR that OCRE assigns as its good cause for late filing. Although there is some truth to this assertion, we consider it to be an inadequate reason for rejecting this late-filed contention. The publication of the NUREG/CR, which is an authoritative discussion of a method of accounting for previously unanalyzed economic costs, might represent an advance in the application of input/output analysis to nuclear power plants. None of the parties has argued that the technique of the NUREG/CR had been previously applied to nuclear power plants.

Although careful perusal of the DES, armed with the expert knowledge of available economic modelling techniques, might have permitted OCRE to spot the

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deficiency it now alleges, we do not think so high a standard is to be expected of public intervenors. It is enough that OCRE keep up with current expert literature, as it has recently demonstrated that it is capable of doing. LBP-82-53, 16 NRC 196 (1982) at 200-201. Consequently, we find that OCRE has shown good cause for late filing. 10 CFR §2.714(a)(1)(i).

We also find that there are no other means now available by which petitioner can protect its interest. Since it was required to comment on the DES prior to the issuance of the NUREG/CR, the opportunity to comment on the DES was not an adequate means to protect its interest, in light of the new information available to it. 10 CFR §2.714(a)(1)(ii).

Our review of OCRE's filings on this contention persuades us that it has demonstrated its competence and its understanding of this issue. We find that it can be expected to assist in developing a sound record. 10 CFR §2.714(a)(1)(iii).

There is no reason to believe that OCRE's interest in this contention would be represented by existing parties. 10 CFR §2.714(a)(1)(iv).

Although this is an additional issue in this proceeding, we do not believe that inclusion of the issue will cause substantial delay. Hence, we find that 10 CFR §2.714(a)(1)(v) is somewhat adverse to admission of the contention.

On balance, after considering the five factors governing the filing of late contentions, we find that the preponderance of the considerations involved favors admitting OCRE's contention.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 8th day of October, 1982,

ORDERED

(1) The following issue is admitted into this proceeding:

> *Issue #12.* The Final Environmental Statement for the Perry Nuclear Power Plant is deficient because it has not adequately considered the

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economic effects of serious nuclear accidents, using a technique similar to that used in NUREG/CR 2591.

(2) Ohio Citizens for Responsible Energy is the lead intervenor on Issue #12.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 1364 (1982) **LBP-82-91**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Charles Bechhoefer, Chairman
Dr. James C. Lamb
Mr. Ernest E. Hill

In the Matter of **Docket Nos. STN 50-498-OL**
STN 50-499-OL

HOUSTON LIGHTING AND
POWER COMPANY, *et al.*
(South Texas Project,
Units 1 and 2) **October 15, 1982**

The Licensing Board grants the motion of an intervenor to adopt one of the contentions of another intervenor that has withdrawn from the proceeding but denies the motion to adopt four other contentions of the departed intervenor. The Board also dismisses several other proposed contentions.

OPERATING LICENSE HEARINGS: ISSUES FOR CONSIDERATION

The withdrawal of a party from an operating license proceeding normally serves to remove that party's contentions from the proceeding (at least insofar as those contentions have not yet been heard).

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

Contentions filed later than 15 days prior to the special prehearing conference in an operating license proceeding are considered as late-filed. Except in limited circumstances, they may be admitted only upon a favorable balancing of all of the five factors set forth in 10 CFR §2.714(a)(1). Where "good cause" for failure to file on time (factor (i)) has not been demonstrated, a contention may still be accepted, but the burden of justifying acceptance of a late contention on the basis of the other factors is considerably greater.

RULES OF PRACTICE: UNTIMELY INTERVENTION

The "good cause" factors of 10 CFR §2.714(a)(1) apply equally to the admissibility of both late-filed intervention petitions and late-filed contentions.

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

The required balancing of the "lateness" factors of 10 CFR §2.714(a)(1) is not obviated by the circumstance that the proffered contentions are those of a participant that has withdrawn from the proceeding. *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 795-98 (1977).

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

Even where the lateness factors of 10 CFR §2.714(a)(1) are balanced in favor of admitting a late-filed contention, a tardy petitioner with no good excuse for lateness may be required to take the proceeding as it finds it.

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

A motion of a *pro se* intervenor to adopt late-filed contentions is not to be held to those standards of clarity and precision to which a lawyer's filing might reasonably be expected to adhere.

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RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

The withdrawal of one party does not constitute "good cause" for the belated delay of a petitioner in seeking to substitute itself for the withdrawing party, or in seeking to adopt the withdrawing party's contentions.

MEMORANDUM AND ORDER

(Ruling upon CCANP's Motion to Adopt Contentions of CEU)

On June 15, 1982, we approved the joint request of Citizens for Equitable Utilities (CEU) and the Applicants that CEU be permitted to withdraw as an intervenor from this proceeding, subject to certain terms and conditions (Tr. 10384). *See* Memorandum (Memorializing Certain Rulings Announced During Evidentiary Hearing Sessions of June 15-17, 1982), dated June 24, 1982. As we pointed out in that Memorandum, CEU's withdrawal would normally serve to remove that party's contentions from the proceeding (at least insofar as those contentions have not yet been heard). *See Texas Utilities Generating Company, et al.* (Comanche Peak Steam Electric Station, Units 1 and 2), CLI-81-36, 14 NRC 1111 (1981). At the request, however, of Citizens Concerned About Nuclear Power (CCANP), another intervenor, we permitted that organization to advise us whether it wished to adopt and pursue any of the five contentions that CEU alone had sponsored (numbers 4-8), as well as the additional "American Bridge" proposed contentions which CEU had originally sponsored and CCANP had later co-sponsored.

On July 29, 1982 (within the amended schedule approved by the Board), CCANP moved to adopt all five of the contentions that CEU, through its withdrawal, had abandoned. (CCANP made no mention of any of the "American Bridge" proposed contentions.) On August 13 and 18, 1982, respectively, the Applicants and NRC Staff each filed a response opposing CCANP's motion. For reasons hereinafter set forth, we grant CCANP's motion with respect to contention 4 but deny it with respect to the other contentions which CCANP seeks to adopt. Because the proposed "American Bridge" contentions relate primarily to the vendor surveillance program of the project's former construction contractor, an organization which will no longer be employed for further construction, we regard those contentions as moot (as well as abandoned) and dismiss them for those reasons.

1. Contentions (such as those involved here) filed later than 15 days prior to the special prehearing conference (which in this case took place in early 1979) are considered as late-filed. Except in limited circumstances (*see* note 1, *infra*), they

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may be admitted only if they meet the normal standards for contentions (*e.g.*, basis and specificity) and, as well, upon a favorable balancing of the five factors set forth in 10 CFR §2.714(a)(1), *viz:*

(i) Good cause, if any, for failure to file on time.
(ii) The availability of other means whereby the petitioner's interest will be protected.
(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
(iv) The extent to which the petitioner's interest will be represented by existing parties.
(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

See, e.g. Houston Lighting and Power Company (Allens Creek Nuclear Generating Station, Unit 1), ALAB-671, 15 NRC 508, 509 (1982).

We are here concerned only with the "lateness" or "good cause" factors, inasmuch as we have previously determined that the former CEU contentions met the other requisite requirements for contentions. The "good cause" factors of 10 CFR §2.714(a)(1) apply equally to the admissibility of both late-filed intervention petitions and late-filed contentions. *See* 43 *Fed. Reg.* 17798 (April 26, 1978); *Consumers Power Company* (Midland Plant, Units 1 and 2), LBP-82-63, 16 NRC 571, 586 (1982). Moreover, as the Applicants and Staff each point out, the required balancing of factors is not obviated by the circumstance that the proffered contentions are those of a participant that has withdrawn from the proceeding. *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 795-98 (1977). As there stated:

> If, in the circumstances of the particular case, there is a sound foundation for allowing one entity to replace another, it can, of course, be taken into account in the making of the "good cause" determination.

Id. at 796.

In balancing the "lateness" factors in the circumstances before us, we must take all of the factors into account.[1] However, we are not required to give the same weight to each one of them. *South Carolina Electric and Gas Company, et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895 (1981). Where "good cause" for failure to file on time (factor (i)) has not been demonstrated, a contention may still be accepted, but the burden of justifying acceptance of a late contention on the basis of the other factors is considerably greater. *Nuclear Fuel Services, Inc. and New York State Atomic and Space Development Authority* (West Valley Reprocessing Plant), CLI-75-4, 1 NRC 273,

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[1] Information emanating from recently issued Staff documents could give rise to contentions without the necessity of balancing the various factors. *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982). No such information is involved in our present consideration of CCANP's motion.

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275 (1975). In that regard, the likelihood that acceptance of a contention will contribute to the development of a sound record on a particular question is of significant importance. *Midland*, LBP-82-63, *supra*, 16 NRC at 577; *Cincinnati Gas and Electric Company, et al.* (William H. Zimmer Nuclear Station), LBP-80-24, 12 NRC 231, 237 (1980); *accord, Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 617 (1976). In any event, even where the factors are balanced in favor of admitting a late-filed contention, a tardy petitioner with no good excuse for lateness may be required to take the proceeding as it finds it. *West Valley*, CLI-75-4, *supra*, 1 NRC at 276.

We turn now to CCANP's request.

2. CCANP's motion to adopt contentions 4-8 is perfunctory at best. It briefly recites the subject matter of each of those contentions. It goes on to state that CEU has already met the standards of specificity and has established a sufficient basis for the litigation of these contentions — a proposition with which no party disagrees and which, as we have previously pointed out (p. 1367, *supra*), is not in issue. As for good cause for lateness, CCANP states only that its motion is responding to the withdrawal of CEU, and that the questions raised by the contentions "were not answered prior to CEU's withdrawal" and "relate to potentially serious health and safety problems which could be created should the South Texas Nuclear Project [ever] be given a license to operate." CCANP adds that it "considers itself obligated to pursue these questions to a satisfactory resolution."

These cursory assertions, taken alone, are insufficient to produce a balance of the factors in 10 CFR §2.714(a)(1) which would cause us to allow CCANP to adopt any of CEU's abandoned contentions. *Cf. Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-615, 12 NRC 350, 352 (1980). Nonetheless, we recognize that CCANP is not represented by counsel and that a *pro se* intervenor is not "to be held to those standards of clarity and precision to which a lawyer might reasonably be expected to adhere." *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 546 (1980); *Public Service Electric and Gas Company* (Salem Nuclear Generating Station, Units 1 and 2), ALAB-136, 6 AEC 487, 489 (1973). Thus, in balancing the "lateness" factors, we have taken into account not only the limited claims made by CCANP but also facts and circumstances of which we are aware and which, in our opinion, are relevant to a balancing of the "lateness" factors.

In reaching a balance of the factors on the various contentions, we have found that factor (i) balances the same way for all of the contentions but that the other factors balance differently for contention 4 (hurricanes) than they do for contentions 5-8. We shall therefore discuss factor (i) first and then turn to the application of the other factors to contentions 5-8 and 4, respectively.

a. The only reason cited by CCANP, or of which we are aware, for the late filing of these contentions is that the filing resulted from the withdrawal of CEU.

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CCANP filed its motion within a reasonable time after that withdrawal. Before doing so, however, it never had exhibited any particular independent interest in any of the contentions in question. But the withdrawal of one party has been held not to constitute "good cause" for the belated delay of a petitioner in seeking to substitute itself for the withdrawing party (or, comparably, to adopt the withdrawing party's contentions). *River Bend*, ALAB-444, *supra*, 6 NRC at 796-97. As the Court of Appeals has stated (in a decision relied on by the River Bend Appeal Board):

> We do not find in statute or case law any ground for accepting the premise that proceedings before administrative agencies are to be constituted as endurance contests modeled after relay races in which the baton of proceeding is passed on successively from one legally exhausted contestant to a newly arriving legal stranger.

Easton Utilities Commission v. *AEC*, 424 F.2d 847, 852 (D.C. Cir. 1970). And, as we noted earlier, the same standards apply to an existing intervenor seeking to adopt the abandoned contentions of another intervenor as to a "newly arriving legal stranger."[2]

Based on the foregoing authority, we find that CCANP as a matter of law has not established "good cause" for its delay in asserting its interest in litigating contentions 4-8.

b. In the context of this case, factors (ii) and (iv) are related. As applied to contentions 5-8, we are aware of no means outside the NRC for CCANP's interest in those contentions to be protected; and, if CCANP is not permitted to adopt those contentions, its interest in those contentions will not be represented by an existing party. On the other hand, one of the parties to this proceeding — the NRC Staff — has the primary responsibility for reviewing all safety and environmental issues prior to the award of any operating license. Although such review does not involve the adjudicatory process, the Staff nevertheless seeks to provide reasonable assurance that an issue is resolved satisfactorily. CCANP has provided us with no reason to question whether the NRC Staff's review of the issues raised by contentions 5-8 will be adequate. It has advanced only its conclusory opinion that, as of last June, the issues had not been resolved — a not too surprising situation given the current status of the project and the fact that neither construction nor the Staff's review is scheduled to be completed for more than 4 years. Moreover, with respect to contentions 5-8 (and unlike contention 4), we have no reason to question whether the Staff's review will be adequate. (We will discuss contention 4 in section 3, *infra*.) For those reasons, and lacking any contrary information from

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[2] *See also South Carolina Electric and Gas Company, et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 887 n.4 (1981) and *Duke Power Company* (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-440, 6 NRC 642, 644-45 (1977), in each of which the Appeal Board ruled that allegedly inadequate representation by an existing intervenor did not constitute good cause for another petitioner's late-filed intervention.

CCANP, we conclude that CCANP's interest in having contentions 5-8 resolved will be adequately protected by the NRC Staff, albeit outside the adjudicatory process. We regard this factor as neutral with respect to permitting CCANP to adopt contentions 5-8.

c. CCANP has not provided any information as to how it would assist in developing a sound record on any of CEU's contentions. It has not indicated whether it would call any witnesses or whether it would present documentary or other evidence beyond that already identified by CEU. The adjudicatory consideration of various issues, and in particular the availability of cross-examination, will invariably produce a more complete record than would the non-adjudicatory consideration of those same issues. Moreover, CCANP's participation to date has served this purpose. We would expect that its proposed findings (if comparable to those we have recently received from CCANP) would serve to present forcefully and competently views somewhat at odds with those advanced by the Applicants or Staff. Thus, to some extent, our acceptance of CCANP as a sponsor of contentions 5-8 would inevitably serve to assist in producing a better record on those contentions than would otherwise be the case. We balance this factor slightly in favor of accepting contentions 5-8.

d. Permitting CCANP to adopt contentions 5-8 would perforce result in a broadening of the issues, but delay in this extended proceeding would not necessarily result. These issues would not likely be heard until phase III of this proceeding (some time in 1986). There is sufficient time in the interim to establish schedules for additional discovery and hearings which could preclude any delay in completion of the proceeding. However, some uncertainty with respect to potential delay does remain, since we cannot predict with perfect accuracy the length of time needed to hear these issues. Therefore, we regard factor (v) as balancing slightly against accepting contentions 5-8.

e. In sum, factor (i) must be balanced against accepting any of the contentions, including 5-8. Factor (iii) balances slightly in favor of accepting contentions 5-8, and factor (v) balances slightly against accepting those contentions. Factors (ii) and (iv) are neutral. Based on this balance of the factors, we conclude that the strong showing needed to offset the absence of good cause for late filing has not been made with respect to contentions 5-8. We therefore decline to permit CCANP to adopt those contentions.

3. As we have explained, CCANP's showing of good cause for late filing (factor (i)) was as inadequate for contention 4 as for the other contentions.

Nonetheless, based on the record before us, the balance of the factors is considerably different for contention 4 (hurricanes) than for the other contentions.[3]

a. With respect to factors (ii) and (iv), and as was the case with the application of those factors to the other contentions, we know of no forum outside NRC for CCANP's interest in contention 4 to be protected; and, if CCANP is not permitted to adopt contention 4, its interest in that contention will not be represented by an existing party. The NRC Staff will undertake its normal review of the design of this facility *vis-a-vis* hurricanes. However, although CCANP has not provided us with information demonstrating that the normal review might be deficient, we have reason to question whether the Staff's review will be adequate (see section 3.b, *infra*). For that reason, we conclude that CCANP'S interest in contention 4 may not be adequately protected by the NRC Staff and that factors (ii) and (iv) balance slightly in favor of permitting CCANP to adopt that contention.

b. As in the case of the other contentions, adjudication by its very nature would assist in producing a better record on contention 4 than would otherwise be the case. With respect to this contention, however, adjudication may be the *only* way of achieving an adequate record. The contention asserts that the facility has been inadequately designed to withstand hurricanes which have occurred along the Texas Gulf Coast. CEU advanced this claim with respect to both Category I structures and equipment, and non-Category I structures and equipment that might provide missile-type projectiles which could penetrate Category I structures. It challenged the adequacy of the operating wind speed of 120 mph (with a peak gust value of 156 mph) appearing in the Applicants' Environmental Report and the Staff's construction-permit Safety Evaluation Report (SER). In support of this claim, its intervention petition (dated February 23, 1979) asserted, *inter alia*, that Hurricane Carla (September 1961) had winds in excess of 170 mph at Port Lavaca and from 150-175 mph in the Matagorda area, and that Hurricane Celia (August 1970) had gusts at the time of landfall of 160-180 mph. In a response to discovery which it filed on April 23, 1980, CEU provided, *inter alia*, studies by the Department of Commerce (NOAA) and the Center for Applied Geosciences, College of Geosciences, Texas A&M University, which appear to support the allegations of the contention.

In contrast, the FSAR at the OL stage reflects that, although wind speeds greater than 156 mph had been recorded relatively close to the site, for varying reasons they were not utilized by the Applicants. Hurricane Carla is said to have produced wind gusts of 175 mph at Port Lavaca (approximately 40 miles from the site) and 160 mph at Matagorda (approximately 8 miles from the site). These readings were discounted by the Applicants because they were assertedly "obtained from instruments not installed, calibrated, or maintained by the U.S. Weather Bureau [citing a non-published personal communication dated June, 1974] * * * and *may* not have been calibrated or maintained according to prescribed U.S. Weather Bureau procedures" (FSAR, §2.3.1.2.6, at p. 2.3-6a, emphasis supplied). The FSAR goes on to state that the instrument at Matagorda was capable of monitoring wind speeds of up to 125 mph; and that, during Hurricane Carla, "the indicator continued to move beyond the 125 mph limit to a position on the dial estimated to be 183 mph, at which time the support structure failed" (*id.*, at p. 2.3-7). For such reasons, the FSAR denominated these high wind speed readings as "highly questionable" and, accordingly, declined to utilize them in determining the wind speed for which the facility was to be designed. Instead, the FSAR utilized the weighted average of the highest wind speeds recorded for various hurricanes (including Celia and Carla) at Corpus Christi, Galveston and Victoria, Texas, locations considerably farther from the site than Matagorda or Port Lavaca.

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[3] Contention 4 reads as follows:

> The South Texas Project (STP) Category I structures and equipment are inadequately designed and constructed with respect to wind loadings as demonstrated by the fact that actual wind velocities associated with hurricanes which have occurred along the Texas Gulf Coast have exceeded wind loadings for which STP structures have been designed and evaluated. Further there are non-Category I structures containing equipment which if destroyed or damaged would jeopardize the safe operation of STP. These non-Category I buildings are not designed to withstand winds generated by hurricanes and if damaged would provide missile type projectiles which could penetrate Category I structures which are inadequately protected.

As should be readily apparent, this analysis includes many unanswered questions. For instance, is a composite of high wind speeds at locations somewhat distant from the site acceptable for determining the "most severe [hurricane] * * * historically reported for the site and surrounding area," as contemplated by 10 CFR Part 50, Appendix A, Criterion 2, or for determining the "fastest mile of wind" as contemplated by §2.3.1 of the Standard Review Plan (NUREG-0800)? Is it appropriate to discount or ignore local high wind speeds on the ground that they stem from instruments which "may" not have been calibrated or maintained in accordance with Weather Bureau (NOAA) procedures? Should not high wind speeds appearing at least in the NOAA report supplied by CEU (which explicitly took the "facts on each storm * * * from Weather Service records") be utilized in determining the appropriate hurricane design basis for this facility — particularly since those wind speeds apparently occurred much closer to the site than those utilized by the Applicants? In short, does the current record of this proceeding reflect an effort of the Applicants to explain away the highest reported wind speeds, rather than an effort to assure that the facility is appropriately designed to resist wind speeds which could predictably be reached at the site?

Normally, we would expect that questions of this sort would be resolved by the Staff prior to its grant of an operating license. At the construction permit stage, however, the Staff accepted a virtually identical submission by the Applicants (PSAR, §§2.3.1.3.1, 2.3.1.3.6). The Staff noted that the Applicants had examined and discounted reports of extreme wind speeds in the site area but concluded, without explanation, that the selected operating wind speed of 120 mph (with a peak gust value of 156 mph) was "acceptable based on the data available"

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(construction permit SER, NUREG-75/075, §2.3.2, at p. 2-10).[4] For that reason, given the existing Staff conclusion at the construction permit stage there is a significant question in our minds whether the Staff would seriously consider or reconsider questions such as we have outlined or would provide an adequate on-the-record response to such questions.

There is another reason for a serious review of hurricanes at the OL stage. In August, 1980, after the construction permit review — indeed subsequent to the submission and acceptance of CEU's hurricane contention — another hurricane (Allen) occurred with wind speeds reportedly as high as 180 mph (although not necessarily at the point where that hurricane passed nearest to the site). The ramifications of this hurricane should be thoroughly studied prior to reaching any decision on an appropriate hurricane design for this facility.[5]

Finally, and of significant importance, the timing of our consideration of the hurricane issue will produce a more sound licensing record than if the Staff considers this issue during the normal course of its review. The Staff would not normally consider this question until it issues its SER for operations; that issuance will not likely occur in this proceeding until some time in 1986, when construction of the facility is virtually complete. At that time, however, alteration of the facility to achieve additional hurricane protection, should that be necessary, would be difficult. The only practicable remedy for inadequate hurricane design which might then be viable might be a technical specification limiting operations in the event of the approach of a severe hurricane.[6] That remedy in our view presents potentially undesirable social, if not technical, implications. In contrast, at the stage of construction to be reached in the relatively near future, structural alteration likely could be made if necessary to accommodate hurricane winds higher than those for which the facility is currently designed.

At the prehearing conference in December, 1981, we suggested that the hurricane issue be dealt with in Phase II of the proceeding (*i.e.*, sometime during 1983). Tr. 9042-43, 9085-86; Fourth Prehearing Conference Order, dated December 16, 1981, pp. 5-6. The Staff was not enthusiastic over that approach. Tr. 9085-88. We opine that, if left to the Staff, the issue will not likely be considered until too late in the review to produce what might turn out to be the best resolution. For that additional reason, the record on hurricanes is likely to be more sound if developed by the Licensing Board through adjudication, on the schedule which we have recommended, than by the Staff through its normal review procedures.

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[4] The construction permit hearing was uncontested on this issue, and the Licensing and Appeal Boards did not even refer to hurricane wind speeds. LBP-75-46, 2 NRC 271, 308; LBP-75-71, 2 NRC 894, 901 (1975); *affirmed*, ALAB-306, 3 NRC 14 (1976).

[5] We have already advised the parties that Hurricane Allen should be examined in conjunction with contention 4 (Tr. 9042). Section 2.3 of the FSAR (which includes discussion of hurricanes) was most recently amended in May, 1979 and thus includes no discussion of Hurricane Allen.

[6] The Staff apparently is imposing a condition of that type on Indian Point Unit 2, an operating reactor which it believes is inadequately designed to withstand severe hurricanes. See *Nucleonics Week*, Vol. 23, No. 36 (September 9, 1982), at pp. 3-4.

In sum, we find that contention 4 is a serious safety issue and that the record on this contention will be significantly improved if developed through adjudication, and we balance factor (iii) strongly in favor of permitting CCANP to adopt that contention.

c. Permitting CCANP to adopt contention 4 would result in a broadening of the issues, but delay clearly would not result. As set forth above, we plan — indeed we find it essential — to litigate contention 4 during phase II of this proceeding; those hearings will take place some time in 1983, approximately three years prior to the likely issuance of the SER. Further discovery on contention 4 need not extend beyond the period heretofore scheduled for phase II discovery (a 90-period commencing with the future issuance by the Staff of its review of Bechtel's analysis of the Quadrex Report, *see* Tr. 10664-667).[7] For that reason, we consider factor (v) as balancing slightly in favor of permitting CCANP to adopt contention 4.

d. In sum, factor (i) must be balanced against accepting contention 4 as well as the others. Factors (ii), (iv) and (v) balance slightly in favor of permitting CCANP to adopt contention 4. Factor (iii) balances strongly — even conclusively — in favor of accepting contention 4. Based on this balance of the factors, we conclude that the strong showing needed to offset a lack of showing of good cause for late filing has been made with respect to contention 4 (hurricanes). We are therefore permitting CCANP to adopt that contention.

With respect to contention 4, much discovery has already been undertaken, albeit by and from CEU rather than CCANP. CCANP must take the proceeding with regard to that contention as it finds it. Thus any further discovery with respect to contention 4 (which, as we have stated, is not to extend beyond the time frame previously established for phase II discovery) must be limited to supplementary or additional information. (The Applicants and Staff may, of course, seek to determine whether CCANP plans to present information beyond that previously identified or produced by CEU; CCANP may inquire whether the Applicants or Staff possess relevant information additional to that which was provided to CEU.) We are permitting such discovery with respect to contention 4 to commence immediately.

For the reasons stated, it is, this 15th day of October, 1982,

ORDERED

1. That CCANP's motion to adopt contentions of CEU is *granted* with respect to contention 4 and *denied* with respect to contentions 5-8.

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[7] We earlier contemplated that issues other than the Quadrex Report would be included in this discovery period. Memorandum dated June 24, 1982, p. 3.

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2. That the proposed "American Bridge" contentions are *dismissed*.

3. That discovery on contention 4 (as outlined herein) may begin immediately but shall extend no later than the period heretofore established for other phase II issues.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 1375 (1982) LBP-82-92

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James A. Laurenson, Chairman
Mr. Glenn O. Bright
Dr. Jerry Harbour

In the Matter of

Docket Nos. 50-416-OL
50-417-OL
ASLBP No. 82-476-04-OL

MISSISSIPPI POWER AND LIGHT COMPANY, *et al.*
(Grand Gulf Nuclear Station, Units 1 and 2)

October 20, 1982

The Licensing Board denies an untimely petition to intervene filed by the State of Louisiana in a previously uncontested matter.

LICENSING BOARDS: JURISDICTION

A licensing board has jurisdiction pursuant to 10 CFR §2.717(a) to rule on an untimely petition to intervene even though the Office of Nuclear Reactor Regulation already has issued a low power operating license.

RULES OF PRACTICE: INTERVENTION BY A STATE

Where a state seeks to intervene and attain party status pursuant to 10 CFR §2.714(a)(1) rather than participate as an interested state pursuant to 10 CFR §2.715(c), its untimely petition to intervene will be evaluated under the criteria for nontimely petitions to intervene set forth in §2.714(a)(1).

INTERVENTION: UNTIMELY PETITION

In evaluating the factors enumerated in 10 CFR §2.714(a) for late-filed petitions, the Board finds that the State of Louisiana failed to establish good cause for its late-filing, offered no showing of its ability to make a substantial contribution to the record, and sought to expand the issues and delay the proceeding. The Board denies the petition to intervene because the above factors outweighed the finding that no other means were available to protect the State's interest and no other party would represent that interest.

ENVIRONMENTAL ISSUES: FUEL CYCLE; VALIDITY OF TABLE S-3

Because the D.C. Circuit Court of Appeals granted a motion to stay the issuance of its mandate in *NRDC* v. *NRC*, 685 F.2d 459 (D.C. Cir. 1982), (in which it found Table S-3 to be invalid) and subsequently a petition for *certiorari* was filed in the Supreme Court, Table S-3 remains in force and, pursuant to 10 CFR §2.758, this Board is unable to consider challenges to its validity.

MEMORANDUM AND ORDER
DENYING STATE OF LOUISIANA'S PETITION FOR INTERVENTION

I. SUMMARY

In a previously uncontested operating license matter, the Licensing Board holds that it has jurisdiction to rule on the late-filed petition to intervene of the State of Louisiana even though the Office of Nuclear Reactor Regulation already issued a low power operating license. However, the Licensing Board denies the petition to intervene. In evaluating the factors enumerated in 10 CFR §2.714(a) for late-filed petitions, the Board finds that Louisiana failed to establish good cause for its late-filing, offered no showing of its ability to make a substantial contribution to the record, and sought to expand the issues and delay the proceeding. These factors were found to outweigh the factors that no other means were available to protect Louisiana's interests and that no other party would represent that interest. The fact that the District of Columbia Circuit Court of Appeals stayed its mandate in *NRDC* v. *NRC*, 685 F.2d 459 (D.C. Cir. 1982), coupled with NRC's petition for *certiorari* to the U.S. Supreme Court means that Table S-3 is still in force at this time. Thus, pursuant to 10 CFR §2.758, the Board is unable to consider challenges to Table S-3 in this proceeding. The Commission has retained to itself the decision whether to grant full power operating licenses. The petition is denied and the proceeding is dismissed.

II. PROCEDURAL HISTORY

On September 4, 1974, the Atomic Energy Commission issued construction permits for Grand Gulf 1 and 2. On July 28, 1978, the Nuclear Regulatory Commission published a notice in the *Federal Register* regarding "receipt of application for operating licenses for Grand Gulf 1 and 2 and opportunity for hearing." 43 *Fed. Reg.* 32903 (July 28, 1978). No petition for leave to intervene or request for hearing was received within the 30-day period provided in the notice. Hence, no licensing board was convened and no hearing on the operating licenses was held. Construction of Grand Gulf 1 was completed on June 16, 1982 and a low power operating license was issued to Applicants by the Office of Nuclear Reactor Regulation on that date for Grand Gulf 1. Construction of Grand Gulf 2 was halted on December 31, 1979 with approximately 22% of construction completed. Although some construction has resumed, the completion of construction of Grand Gulf 2 is not scheduled at this time.

On July 26, 1982, the Attorney General of Louisiana, William J. Guste, Jr., filed a "Petition to Participate as an Interested State in Facility Operating License Proceedings, etc." Curiously, the body of the Attorney General's Petition indicates that Louisiana seeks party status as an intervenor pursuant to 10 CFR §2.714(a)(1) rather than participation as an interested state pursuant to 10 CFR §2.715(c). The Petition does not set forth a specific proposed contention but mentions a need to consider the environmental impact of fuel cycle activities pursuant to the decision concerning Table S-3 in *NRDC* v. *NRC*, *supra*. The Petition does not specify either Grand Gulf 1 or Grand Gulf 2 as the object of the Attorney General's concern. In light of the suspended construction status of Grand Gulf 2, we shall assume that the Attorney General's Petition relates to Grand Gulf 1. In addition to the foregoing problems concerning the Petition, it also fails to contain any information concerning the following: (1) good cause for failure to file on time; (2) the extent to which Louisiana's participation may be expected to assist in developing a sound record; and (3) whether Louisiana's participation will delay the proceeding.

On August 3, 1982, this Board was established to rule on the Petition and to preside over the proceeding in the event that a hearing is ordered. On August 10, 1982, the NRC Staff filed its opposition to the Petition. Staff contends that a balancing of the factors enumerated in 10 CFR §2.714(a)(1) concerning nontimely intervention weighs heavily against accepting the Petition and that it should be denied. On August 19, 1982, Applicants filed their Answer to the Petition. Applicants assert the following: (1) the Board lacks jurisdiction to consider the

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Petition or grant any relief; and (2) even if the Board has jurisdiction, the Petition is untimely and should be denied.

On August 31, 1982, the Board ordered the State of Louisiana to respond to the arguments of NRC Staff and Applicants. Louisiana's Brief in Support of its Petition makes it clear that the State is seeking intervention and party status. The Brief asserts that "all further proceedings in the instant matter [should] cease until the issue [of the validity of Table S-3] is resolved by the Supreme Court." Louisiana Brief at 3. Louisiana contends that the Licensing Board has jurisdiction to rule on the petition for leave to intervene. Turning to the criteria in 10 CFR §2.714(a), the State argues as follows: (1) it has good cause to justify its untimely petition; (2) it has the means to obtain expertise to assist in developing a sound record; (3) the NRC Staff concedes that the State has no other available means or parties to protect or represent its interests; and (4) the factor of delay is inapplicable when the granting of a petition results in the ordering of a hearing.

III. JURISDICTION OF BOARD

This Board was established on August 3, 1982, by B. Paul Cotter, Jr., Chief Administrative Judge, Atomic Safety and Licensing Board Panel. Nevertheless, Applicants assert that "the Licensing Board lacks jurisdiction to consider the Petition or grant any relief with respect to Grand Gulf, Unit 1." Thus, before we may consider the merits of the Petition or the opposition to it, we must resolve the issue of the Board's jurisdiction to decide this matter.

In essence, Applicants assert that "when the Director, Nuclear Reactor Regulation, issued an operating license on June 16, 1982, the proceeding with regard to Unit 1 was at an end and the Licensing Board no longer possessed jurisdiction to entertain a petition for intervention or a request for any relief." Applicants' Answer at p. 4. Applicants rely on an introductory paragraph in a Commission decision in an antitrust matter where construction permits were discussed as follows:

> "An initial decision favorable to the applicants was issued in late 1975 (LBP-75-71, 2 NRC 894), construction permits were duly issued, and the Atomic Safety and Licensing Appeal Board affirmed the initial decision in early 1976. ALAB-306, 3 NRC 14. The Commission chose not to review the Appeal Board's decision, and judicial review was not sought within the prescribed time. At that point, the construction permit proceeding, including its antitrust review aspect, had come to an end." *Houston Lighting and Power Company, et al*. (South Texas Project, Unit Nos. 1 and 2), CLI-77-13, 5 NRC 1303, 1305 (1977).

Applicants then argue: "Therefore, the filing of a late petition for intervention after the issuance of an operating license in an uncontested case, as petitioner acknowledges, constitutes a request to reopen the proceeding." Applicants' Answer at 5. This is a *non sequitur*. The Commission, in *South Texas, supra*, stated that the

Licensing Board decided a construction permit proceeding in favor of Applicants, the Appeal Board affirmed, the Commission chose not to review the Appeal Board's decision, and judicial review was not sought. Thus, the Commission concluded that the construction permit proceeding had come to an end. In the instant case, Applicants argue that the filing of a late petition for intervention after the issuance of a low power operating license by the Office of Nuclear Reactor Regulation in an uncontested case "constitutes a request to reopen the proceeding." There are several important differences, *to wit*:

(1) In the instant case the Commission has not yet had an opportunity to review the decision to grant a low power operating license and to make its own decision concerning the issuance of a full power operating license;

(2) The issuance of a low power operating license by the Office of Nuclear Reactor Regulation is not tantamount to a Commission determination not to review an Appeal Board decision; and

(3) Notwithstanding the title of Louisiana's Petition, there is no closed proceeding to reopen.

This appears to be a case of first impression. We have been unable to find any prior decision dealing with attempts to intervene in an uncontested operating license proceeding after the issuance of a low power license. However, on the issue of this Board's jurisdiction, we believe that the Commission's regulations make it clear that this Board has jurisdiction until the Commission acts on the full power operating license. 10 CFR §2.717(a) provides in pertinent part as follows:

> "Unless otherwise ordered by the Commission, the jurisdiction of the presiding officer designated to conduct a hearing over the proceeding, including motions and procedural matters, commences when the proceeding commences. . . . A proceeding is deemed to commence when a notice of hearing or a notice of proposed action pursuant to §2.105 is issued. . . . The presiding officer's jurisdiction in each proceeding will terminate upon the expiration of the period within which the Commission may direct that the record be certified to it for final decision, or when the Commission renders a final decision . . . whichever is earliest."

Since the notice of July 28, 1978 is within the scope of 10 CFR §2.105, the Board's jurisdiction can be established as of that date. In any event, it is clear that, at the latest, this Board acquired jurisdiction upon its establishment on August 3, 1982. More importantly, it is clear from §2.717 that the Board's jurisdiction does not terminate until the time the Commission issues a final decision or the time expires for Commission certification of the record. Thus, the fact that the Office of Nuclear Reactor Regulation issued a low power operating license cannot be equated with a final decision rendered by the Commission. The Commission published a statement of policy in the *Federal Register* announcing that it had decided to "retain to the Commission itself the decision of whether or not an

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applicant will be granted authority for commercial operation, *i.e.*, full power operation. . . ." 46 *Fed. Reg.* 47906 (September 24, 1981). Until the Commission exercises its authority to license full power operation, this Board has jurisdiction to resolve all issues before it. Applicants' objection and challenge to the Board's jurisdiction is denied.

IV. NONTIMELY FILING OF PETITION

The Commission's regulations at 10 CFR §2.714(a)(1) provide that nontimely filings of petitions to participate as a party will not be entertained absent a determination that the petition should be granted based upon a balancing of the following factors:

(i) Good cause, if any, for failure to file on time.
(ii) The availability of other means whereby the petitioner's interest will be protected.
(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
(iv) The extent to which the petitioner's interest will be represented by existing parties.
(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

A. Participation as a Party

The State of Louisiana's Petition is ambiguous. It is captioned, "Petition to Participate as an Interested State . . ." However, in the body of the Petition, Louisiana asks for leave to participate pursuant to 10 CFR §2.714(a)(1). If Louisiana wished to participate as an interested state, it would have relied on 10 CFR §2.715(c). The State of Louisiana is no stranger to NRC proceedings. In 1977, Louisiana appealed a licensing board decision concerning a construction permit for River Bend Station. In that matter, the Appeal Board discussed the differences between participation as an interested state pursuant to §2.715(c) and participation as a party pursuant to §2.714(a). *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 796-98 (1977). Moreover, the fact that Louisiana's Petition here raises specific issues concerning high-level radioactive waste disposal, confirms its other statements in its Petition and Brief regarding intervention as a party rather than participation as an interested state. Upon a consideration of all of the above factors, the Board concludes that Louisiana seeks admission as a party pursuant to §2.714(a) rather than as an interested state pursuant to §2.715(c). The State of Louisiana's Petition will be evaluated accordingly.

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B. Evaluation and Analysis of Section 2.714(a) Factors

As noted by Applicants and NRC Staff, the Petition of the State of Louisiana does not mention or address any of the five factors listed in 10 CFR §2.714(a)(1). However, these matters are addressed in Louisiana's Brief. We will proceed with our analysis of each factor and the balancing of all factors.

1. Good cause for failure to file on time

The State of Louisiana's Petition deals with aspects of disposal and possible release of high-level transuranic radioactive waste and relies upon the decision of the District of Columbia Circuit Court of Appeals in *NRDC* v. *NRC*, *supra*. The State argues that these issues could not have been raised prior to the April 27, 1982 date of that decision and that Louisiana acted promptly thereafter in filing the Petition on July 26, 1982.

Unfortunately for Louisiana, issues surrounding the uranium fuel cycle have been raised in NRC proceedings long before the decision of the Circuit Court of Appeals in *NRDC* v. *NRC*, *supra*. In fact, the State of Louisiana was a party to the *River Bend* construction permit proceeding, ALAB-444, 6 NRC 760, 794, where the Appeal Board discussed the fact that Table S-3 concerning the environmental effects associated with the uranium fuel cycle had been previously invalidated by the District of Columbia Circuit Court of Appeals in the first *NRDC* v. *NRC*, 547 F.2d 633 (D.C. Cir. 1976), *rev. sub nom. Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519 (1978). Thus, the controversy surrounding Table S-3 and the environmental effects of the uranium fuel cycle have been well known, especially to the State of Louisiana from its direct participation in the *River Bend* construction permit proceeding, for a long time. Hence, the April 27, 1982 decision of the District of Columbia Circuit Court of Appeals in *NRDC* v. *NRC*, *supra*, does not contain "new information" and is insufficient to establish good cause for an untimely petition to intervene. ALAB-444 (*River Bend*) establishes Louisiana's knowledge of the existence of a controversy concerning Table S-3. Thereafter, Louisiana waited for five years and until after the issuance of a low power operating license in Grand Gulf before filing its Petition. There is nothing in the record before us from which it can be established or inferred that there is good cause for this untimely filing.

2. Availability of other means

The second factor to be considered pursuant to §2.714(a) is whether other means are available to protect Louisiana's interests. Applicants contend that the NRC Staff will adequately protect the State's interests. However, the NRC Staff

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concedes that except for the possibility of participating in an NRC rulemaking proceeding, "there may be no means other than participation in a proceeding on the Grand Gulf licensing which would afford the same degree of protection. . . ." NRC Staff Opposition to Untimely Petition to Intervene at 6-7. However, the Staff contends that under the circumstances of the instant matter, this factor should be given little weight.

Last year, the Appeal Board reversed a Licensing Board's grant of a untimely intervention petition in *South Carolina Electric and Gas Company, et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881 (1981). In that case, the Appeal Board found that although there were no other available means to protect the late intervenor's interests, that factor and the factor of the extent to which other parties would protect that interest were entitled to less weight than the other three factors enumerated in §2.714(a). *Id.* at 895. While it is true, as Applicants assert, that the NRC Staff has a duty to make the requisite findings pursuant to §50.57 including, *inter alia*, the fact that the issuance of the license will not be inimical to the health and safety of the public, we find that this obligation does not constitute other means to protect the interests asserted by Louisiana. Indeed, even the NRC Staff does not contend that its role would afford the same degree of protection for Louisiana as would party status as an intervenor. Nevertheless, in accord with ALAB-642 (*Summer*), we conclude that this factor, although resolved in favor of Louisiana, is entitled to less weight than other factors enumerated in §2.714(a).

3. *Development of a sound record*

Applicants and NRC Staff correctly note that Louisiana has not attempted to demonstrate any special expertise it possesses concerning the issues raised in the Petition. Indeed, Louisiana has not indicated that it would do anything other than express its views on these subjects. Its assertion that it "has, or has the means to get, all the expertise necessary to fully address the issue in point," Brief in Support of Petition at 18, is vague and insufficient. Without belaboring the point further, we find that Louisiana failed to establish that its intervention in this proceeding could be expected to assist in developing a sound record.

4. *Representation of interest by existing parties*

Since there is no contested proceeding at the present time, there are no "existing parties" who might adequately represent Louisiana's interest. The remaining arguments and law concerning evaluation of this factor are essentially identical to those set forth under "*Availability of other means*," *supra*. The result here is the same: this factor, although resolved in favor of Louisiana, is entitled to less weight than other factors enumerated in §2.714(a).

5. *Delay and broadening of issues*

The general principle concerning delay was stated by the Appeal Board as follows: "Manifestly, the later the petition, the greater the potential that the petitioner's participation will drag out the proceeding." *Detroit Edison Company* (Greenwood Energy Center, Units 2 and 3), ALAB-476, 7 NRC 759, 762 (1978). That principle is particularly pertinent to the instant case because of the following: (1) the petition is almost four years late; (2) Louisiana seeks to commence a licensing proceeding rather than join one already in progress; and (3) a low power operating license has already been issued to Applicants. Under these circumstances, it cannot be disputed that Louisiana's participation, at this late date, will broaden the issues and delay the proceeding. Therefore, we find that this factor must be resolved against Louisiana.

C. The Balancing Test

Before turning to the balancing test, we note that we have also considered Louisiana's status as a governmental entity. We agree with the State that "such status weighs in favor of the petitioner." Brief in Support of Petition at 10. However, based upon our analysis and evaluation of the five factors enumerated in §2.714(a), we find that Louisiana (1) is inexcusably late; (2) offers no showing of its ability to make a substantial contribution to the record; and (3) seeks to expand the issues and delay the proceeding. Against those factors, we must balance the unavailability of other means to protect Louisiana's interests and the fact that there is no other party herein to represent that interest. As we have noted above, the latter two elements are entitled to less weight than the other three. Moreover, even the consideration of Louisiana's status as a governmental entity is insufficient to overcome and outweigh the other three factors resolved against the State. We also find that it would be unfair and unjust to permit Louisiana to wait until a low power operating license is issued in an uncontested matter and then appear, without any showing of good cause for its failure to act on time, and delay the issuance of a full power license while an adjudicatory proceeding is fabricated. For the foregoing reasons, pursuant to §2.714(a), we deny Louisiana's Petition.

V. LOUISIANA'S REQUEST FOR RELIEF

Louisiana's Petition requests "the Nuclear Regulatory Commission and the Atomic Licensing Board (sic) to refrain from granting any operating license to the Grand Gulf Nuclear Power Station until the issues herein are resolved." The petition cites the D.C. Circuit Court of Appeals decision in *NRDC* v. *NRC*, 685 F.2d 459 (D.C. Cir. 1982) and goes on to say that "Judge Bazelon states that in the absence of a valid generic rule, the environmental impact of fuel-cycle activities must be considered in individual proceedings."

Louisiana is correct in its statement that the D.C. Circuit Court of Appeals invalidated the Commission's Table S-3 concerning the uranium fuel cycle for licensing nuclear reactors. The Court held, "we conclude that the Table S-3 Rules are invalid because they fail to allow for proper consideration of uncertainties concerning the long-term isolation of high-level and transuranic wastes." *Id.* at 494. However, on September 1, 1982, that Court granted motions for stay of mandate and directed the Clerk not to issue the mandate for a period of 30 days. On September 27, 1982, the NRC filed a petition for *certiorari* in the U.S. Supreme Court in this matter. Rule 41(b) of the Rules of Appellate Procedure provides in pertinent part:

> "A stay of the mandate pending application to the Supreme Court for a writ of certiorari may be granted upon motion, reasonable notice of which shall be given to all parties. The stay shall not exceed 30 days unless the period is extended for cause shown. If during the period of the stay there is filed with the clerk of the court of appeals a notice from the clerk of the Supreme Court that the party who has obtained the stay has filed a petition for the writ in that court, the stay shall continue until final disposition by the Supreme Court."

As relevant to the instant case, the order enforcing the decision of the D.C. Circuit Court of Appeals in *NRDC* v. *NRC*, *supra*, has been stayed and, hence, Table S-3 is still in force at this time. Thus, there is no present need to consider the environmental impact of fuel cycle activities in individual cases such as Grand Gulf. Indeed, in adjudicatory proceedings, licensing boards may not consider contentions that NRC Rules or Regulations are invalid. 10 CFR §2.758.

As we note in "*Procedural History*," *supra*, the Office of Nuclear Reactor Regulation issued the low power operating license for Grand Gulf 1 on June 16, 1982. Louisiana is mistaken in its assertion that it was "the decision of the Licensing Board to grant an operational license for 5% power. . . ." Brief in Support of Petition at 27. Finally, the Commission has retained to itself the decision of whether or not an applicant in an uncontested case will be granted authority for full power operation. 46 *Fed. Reg.* 47906 (September 30, 1981). Thus, this Licensing Board is without jurisdiction to grant or to "refrain from granting any operating license to the Grand Gulf Nuclear Power Station. . . ."

VI. ORDER

WHEREFORE, IT IS ORDERED this 20th day of October, 1982, that the Petition of the State of Louisiana, filed on July 26, 1982, is DENIED and this proceeding is DISMISSED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James A. Laurenson, CHAIRMAN
ADMINISTRATIVE LAW JUDGE

Glenn O. Bright
ADMINISTRATIVE JUDGE

Dr. Jerry Harbour
ADMINISTRATIVE JUDGE

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
Dr. Richard F. Cole
Dr. Peter A. Morris

In the Matter of **Docket Nos. 50-352**
50-353

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2) **October 20, 1982**

The Licensing Board denies a motion by an intervenor to postpone a hearing covering limited environmental issues related to the supplementary cooling water system.

LICENSING BOARD: JURISDICTION

A licensing board in an operating license proceeding does not in the first instance control the construction schedule. Nor is a decision by that licensing board necessary before construction can commence when that construction is the subject of a previously issued Final Environment Statement.

RULES OF PRACTICE: SCHEDULING OF HEARING

A licensing board may hold a hearing in advance of issuance of an environmental impact statement on limited environmental issues concerning impacts of operation of an unbuilt part of the plant when such a hearing could facilitate

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implementation of any measures found necessary to mitigate operational environmental impacts. The licensing board will not address the ultimate cost/benefit balance at that time.

CONFIRMATORY MEMORANDUM AND ORDER
(DENYING MOTION OF DEL-AWARE TO CHANGE HEARING SCHEDULE)

This Memorandum and Order confirms the substance of the ruling made on October 4, 1982, on the record of this proceeding. Tr. 755-62.

On September 27, 1982, intervenor Del-Aware Unlimited, Inc. filed a motion asking the Board to postpone the hearings scheduled to begin October 4, 1982. Del-Aware argued that the hearings may not proceed in the absence of, at a minimum, a draft environmental statement (DES).

The Staff had previously objected to the scheduling of the hearing at this time because the final environmental statement (FES) would not be available. *See* Memorandum and Order (unpublished), slip op. at 17 (July 14, 1982). In our Memorandum and Order of July 14, 1982, we acknowledged that we could not force the Staff to reach a position on the limited issues which are to be heard during the October hearings. However, we discussed the advantages of completing hearings on these issues before construction on the supplementary cooling water system commenced.* We also noted that in holding hearings on the three contentions in question, the Board would not be addressing the ultimate cost/benefit balance. *Id.* at 15-18. *See also* Special Prehearing Conference Order (SPCO), LBP-82-43A, 15 NRC 1423, 1479-81 (1982). Therefore, the cases now cited by Del-Aware are inapplicable to this limited hearing.

Nothing that has occurred since our July 14 order has convinced us that the scheduled October hearing is an inappropriate time to consider these issues. The advantages, discussed in the July order, of holding the hearings before construction begins remain. In addition, the Staff has prepared for the scheduled hearing, and its prefiled testimony indicates that it has been able to reach some useful conclusions.

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*The Board explained:

> The courts have emphasized that Congress intended that agencies give serious consideration to environmental costs and that this requires agencies to consider actions to avoid these costs. Hence, the courts have stated they will not permit NEPA to become a "paper tiger" and compliance with it "a *pro forma* ritual." *See Calvert Cliffs' Coordinating Committee, Inc.* v. *AEC*, 449 F.2d 1109, 1114, 1128 (D.C. Cir. 1971). It is commonly recognized that as construction continues, the cost of corrective action to minimize environmental harm may increase, even to the point where such action is not reasonably possible. *Id.* at 1128; *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-78-14, 7 NRC 952, 959-60 (1978); *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-395, 5 NRC 772, 779 (1977). In an effort to comply with Congress's intent in enacting NEPA, the Board intends to consider these contentions before construction has advanced so far that there is no realistic opportunity for it to order actions which it may determine are necessary to minimize harm to the environment.

Order at 3-4.

Del-Aware acknowledges that the Board scheduled these hearings in October to insure timely consideration of environmental matters. *See* Del-Aware's Brief in Support of Motion at 12. However, Del-Aware argues that it is no longer necessary to hold the hearings at this time since, according to Del-Aware, construction need not or can not begin in December 1982, as originally scheduled.

Assuming *arguendo* that Del-Aware is correct that construction could be delayed beyond the original schedule, the Board does not accept that that warrants the postponement of these hearings, particularly at this late date. The Board does not in the first instance control the construction schedule. Nor is a decision by this Board necessary before construction can commence. The construction is the subject of a previously issued valid FES, unless relief being sought as to changes in construction impacts alleged by Del-Aware is granted by the NRC Director of Nuclear Reactor Regulation pursuant to Del-Aware's 10 CFR §2.206 petition. *See* SPCO, 15 NRC 1423, at 1476-79.

In many cases the construction of the supplementary cooling water system would already have proceeded, and any mitigation measures required by the Board at the operating license stage would be after-the-fact modifications. Realizing that it was preferable to consider these matters and any necessary mitigation measures before construction began, the Board took advantage of the unbuilt status of the project and scheduled hearings before its planned construction. However, if due to Del-Aware's insistence the hearings are not held as scheduled, the construction may continue. The purpose of the hearing is to consider whether measures in advance of construction are needed to mitigate operational impacts. If we adopted the "wait and see" attitude, which would result if Del-Aware's request for long delay was granted, the advantages attributable to holding the hearings before construction might be lost.

This does not mean that an FES is not required before an operating license is issued. Nor does it mean that contentions could not be raised based on that FES. *See Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467-70 (1982). However, the FES is not necessary for this very limited hearing.

We note in addition that this extraordinary request by Del-Aware is very late. It has been filed very close to the beginning of the hearing, after three months of intensive discovery and other hearing preparation by the parties and the Board. There is no reason given or apparent as to why this matter was not raised by Del-Aware at the time it was raised by the Staff in June 1982, as an objection to the Special Prehearing Conference Order, or even before.

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Del-Aware's motion asks the Board to consider again a matter which we have considered extensively, beginning with the January 1982, special prehearing conference, and in written rulings thereafter. *See* SPCO, 15 NRC 1423, at 1476-81; Memorandum and Order, slip op. at 2-5, 15-18 (July 14, 1982). When a party, without giving any new reasons or any new data, continuously in effect seeks reconsideration of rulings thoroughly considered previously, we believe that party oversteps the bounds of zealous advocacy, and we take note of that in this instance.

We decline to certify this question to the Commission or to the Appeal Board. There is nothing in our ruling here that is inconsistent with our previous rulings, for which appellate review was never sought.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
October 20, 1982

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Cite as 16 NRC 1391 (1982) **LBP-82-93**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H Frye, III, Chairman
Dr. Emmeth A. Luebke
Dr. Oscar H. Paris

In the Matter of

Docket No. 50-142-OL
(Proposed Renewal of Facility License)

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
(UCLA Research Reactor)

October 22, 1982

On consideration of intervenor's motion to summarily dismiss motions for summary disposition of all contentions, or alternative relief, on the grounds that the motions are a misuse of the summary disposition process and a delaying factor under 10 CFR §2.749(a), Licensing Board adopts a bifurcated procedure for consideration of motions for summary disposition. Motion to dismiss motions for summary disposition is denied.

RULES OF PRACTICE: SUMMARY DISPOSITION

The provisions of 10 CFR §2.749(a) which authorize a licensing board to summarily dismiss motions for summary disposition filed shortly before the hearing commences or during the hearing if the other parties or the board would be required to divert substantial resources from the hearing in order to respond is not applicable to such motions filed in advance of the setting of a hearing schedule.

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RULES OF PRACTICE: SUMMARY DISPOSITION

Motions for summary disposition resolve, on the merits, contentions which involve no factual disputes. This requires a determination of, first, the facts about which there is no genuine dispute, and second, the legal consequences flowing from those facts.

RULES OF PRACTICE: SUMMARY DISPOSITION

Where motions for summary disposition are filed against essentially all contentions, the summary disposition process can be managed better by requiring the parties to initially address the question of which facts are not in dispute and to defer their arguments as to the legal consequences flowing from those facts.

MEMORANDUM AND ORDER

(Ruling on CBG's Motion to Summarily Dismiss Staff's and UCLA's Motions for Summary Disposition, or for Alternative Relief)

On September 1, 1982, Staff and UCLA filed motions for summary disposition of all admitted contentions in this proceeding except Contentions XX (concerning the security plan which is already the subject of a Staff motion for summary disposition) and XXI (concerning emergency planning). On September 7, 1982, Committee to Bridge the Gap (CBG) moved for summary disposition of Contentions XIII (concerning UCLA's special nuclear materials license) and XVII (concerning seismic matters). Subsequently, on September 20, CBG moved to summarily dismiss Staff's and UCLA's September 1 motions. As a result of CBG's September 20 motion, on September 28, this Board suspended the schedule which had been established for responses to motions for summary disposition and set a deadline for responses to that motion. In this Memorandum and Order, we rule on CBG's most recent motion and set out new procedures and a schedule for consideration of the September 1 and 7 motions for summary disposition.

CBG'S SEPTEMBER 20 MOTION

Proper understanding of CBG's unusual motion to summarily dismiss motions for summary disposition filed against it requires an understanding of the posture of this proceeding. Because the application in question seeks renewal of an operating license and was filed prior to the expiration date of the present license, UCLA is entitled to operate the reactor pending disposition of the application. Consequently

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the usual motivation on the part of applicants to conclude proceedings on an application as expeditiously as possible is not present. Despite its expiration, the old license remains effective until the application for renewal is granted or denied. For this reason, the intervenor, CBG, finds itself in an unusual position for an intervenor, that of seeking a speedy resolution of its contentions.

In this situation it is not surprising that CBG views the UCLA and Staff motions as ". . . frivolous, harassing, a misuse of the summary disposition process which is designed to expedite proceedings, and a delaying factor. . . ." (CBG Motion, p. 1.)

To support its motion CBG relies on a Board statement made at the June Prehearing Conference urging the parties to limit their motions for summary disposition to those contentions on which they felt there was a good probability of success. CBG interprets this statement as a "direction" to the parties and asserts that UCLA and Staff have ignored it. CBG points out that 10 CFR §2.749 permits a board to deny summarily motions for summary disposition which occur shortly before a hearing where the motions would require the diversion of parties' or the board's resources from preparation for the hearing. CBG asserts that the hearing date has been tentatively set for December or January and that, if a response by it is required, that date will have to be postponed. Consequently, CBG views this provision as applicable.

CBG has also set forth certain alternative requests for relief if the motions are not summarily denied. These are:

1. Defer consideration of the motions until they are genuinely ripe;
2. Simplify the process by:
    a) permitting CBG to attack the motions as indicating on their face that they are not meritorious with an opportunity to subsequently respond on the merits where the first attack is insufficient;
    b) permitting CBG to respond initially on the merits to the "central issue" which UCLA maintains underlies all the contentions, with a subsequent opportunity to respond to any residual matters; or
    c) permitting CBG to respond orally at a prehearing conference in which it would outline the matters it views to be in dispute, with a subsequent opportunity to respond in writing where the oral response was insufficient;
3. Extend CBG's time for a full written response by six months; or
4. Relieve CBG from the burden of having to include documents as exhibits to its response by permitting it to simply cite the documents.

THE OTHER PARTIES' RESPONSES

Santa Monica supports CBG's request for relief and alternate relief. The City views the motions as filed in disregard of the Board's directives, as filed primarily

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for purposes of delay, and as constituting an impermissible attempt to shift the burden of proof.

Staff takes sharp issue with CBG's motion. It asserts that it has indeed followed the Board's direction to limit its summary disposition motion to contentions on which it has a strong case, and cites the Commission's *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452 at 457 (1981) to the effect that summary procedures should be used where no genuine factual issues exist. Staff also points out that no hearing has yet been scheduled, so that CBG's reliance on 10 CFR §2.749(a) is misplaced.

Staff views CBG's first request for alternate relief, deferral of the motions until they are ripe, as baseless.

Staff attacks CBG's second request for alternative relief, to simplify the procedure by bifurcating it, on several grounds. First, Staff points out that the burden is on it as movant; CBG should thus be able to dispense with Staff's "short generalizations" (Motion, p. 9) without a lengthy response. Next, Staff questions whether CBG has complied with the requirement of the discovery rules that it supplement its answers, pointing to the fact that CBG has not identified the voluminous amount of material it now says it has to present. Staff also argues that CBG's requested relief would in effect require the Board to counsel it in the presentation of its case.

Staff views CBG's request, that it be allowed to respond initially to UCLA's "central issue," as requiring the Board to make findings of fact with respect to that issue and hence as legally unsupportable. Additionally, Staff seems to argue, on the basis of logic, that the contentions are unsupportable.

Finally, Staff indicates that while it opposes CBG's request for six additional months to respond to the motions, it would not oppose an extension of time to November 15, 1982. Staff does not address CBG's request for relief as to exhibits.

UCLA's response raises the same arguments as Staff's. Additionally, UCLA asserts that as a party-litigant, it is entitled to have a ruling identifying which, if any, factual issues are in dispute thus requiring a hearing.

DISCUSSION

1. Request That Motions for Summary Disposition Be Summarily Dismissed

Initially, we must comment on our remarks which CBG has characterized as a "direction" to the parties not to follow the course adopted by Staff and UCLA. While we clearly would have preferred that Staff and UCLA not file such all encompassing motions, we cannot conclude that they have ignored a Board "direction." The Board may not dictate to any party the manner in which it presents its case. Staff and UCLA believe that they have a strong case for summary

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disposition of virtually all contentions. We as a Board may not substitute our judgment for theirs on the merits of their case in order to summarily dismiss their motions. Rather, we must deal with the motions on the merits before reaching a conclusion. Our so-called "direction" was in fact an admonition to realistically view the chances for success in selecting the subject matter of the motions in order to avoid needless delay occasioned by the filing of groundless motions. Our judgment whether Staff and UCLA have heeded that admonition will have to await our ruling on the merits of their motions.

Secondly, we agree with Staff and UCLA that the provisions of 10 CFR §2.749(a) relied on by CBG are not applicable here. No firm hearing date has been set. While it may well be that allowance of the motions will make it impossible to schedule a hearing to commence in December or January as the Board had suggested to the parties, the fact remains that these provisions of §2.749(a) can only come into play once a hearing has been scheduled or is already in progress. Finally, we note that the provision is not mandatory, but rests on the sound discretion of the Board. Grounds to exercise that discretion are not present here.

2. Requests for Alternative Relief

While we agree with CBG that some means of segmenting or bifurcating the responses to the motions for summary disposition would be advisable, we do not consider CBG's suggestions workable.

First, we fail to understand what CBG may have in mind in suggesting that the motions be deferred until they are ripe for decision. We consequently reject this alternative.

Second, CBG's proposals to bifurcate the response process (Motion, pp. 9-12) are inappropriate. Staff's and UCLA's criticisms of these proposals are, in large part, well taken. Particularly, we believe that CBG's proposed course of a preliminary showing, followed by a complete briefing on issues where the Board found the preliminary showing insufficient, would accord CBG a preferred procedural status which is not in accord with the rules. Consequently, we reject these requests.

However, we believe that the summary disposition process can be managed better by adopting another bifurcation of that process which we discuss below. Because this bifurcation will affect the schedule for responses and the nature of those responses, we will discuss CBG's requests for relief with regard to the time for its response and the need to furnish copies of exhibits with that response in connection with bifurcation.

3. Bifurcation of Response to Summary Disposition Motions

The purpose of summary disposition is to resolve, on the merits, matters which involve no factual disputes. The procedure therefore permits issues to be resolved without the necessity of a hearing. As UCLA points out, it is entitled to use the procedure to determine whether there are any factual disputes which require hearing.

Two steps are thus involved in deciding motions for summary disposition. The first is a determination of facts about which there are no genuine disputes. Once these facts are determined, the second step is to apply the law to them to determine what legal result is called for. The Board wishes the parties to focus on the first step of this procedure initially, and to defer their consideration of the second step until the first is completed.

To facilitate the first step, movants are required to attach to their motions a statement of facts which they allege are not in dispute. Staff, CBG, and UCLA have all attached statements of fact to their motions for summary disposition. These statements provide a basis for the parties to address the question of which facts are in dispute and which are not.

The statements do not contain any citations to the documents which the movants maintain establish the facts recited. The rules do not require such citations. However, because the motions in question address all contentions save two, it is necessary that such citations be provided. Consequently, as a first step, the Board requires Staff, CBG, and UCLA to furnish citations to the documents on which each relies for its facts. Each separate statement of fact is to include a specific citation to the authority on which the movant relies for its existence.[1]

The Board notes that while Staff's and CBG's statements of facts are broken down by contention, UCLA's statement is not. UCLA is to indicate with its citations which of its facts apply to which of the contentions.

Once these citations are served, opponents of the motions are to address each of the facts listed by the movants. Opponents are to indicate whether they agree or disagree that each fact listed by the movants is not in dispute. If an opponent disagrees, it is to cite documents which it maintains establish that a dispute exists.[2]

Opponents may also submit a list of facts, broken down by contention and with citations, which they maintain are relevant to a contention, not listed by the movant, and may be in dispute.

The Board notes that some of the facts which the movants have listed may in reality be conclusions of law. These are inappropriate for inclusion in the lists.

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[1] Contentions XIII and XVII are the subject of cross-motions. Therefore, Staff, CBG, and UCLA may wish to stipulate the facts as to these contentions. Santa Monica may or may not choose to join in any such stipulation. Citations to lengthy documents shall include appropriate page and/or paragraph references.

[2] If an opponent cannot furnish such citations, it is to indicate why.

Therefore an opponent may choose to respond to any particular listed fact on that basis.

With these submissions in hand, the Board will, in accord with the rules and precedents, make a determination of the facts which are not in dispute and the facts which are in dispute. Further proceedings will then be scheduled. These further proceedings will, among other things, address legal issues incident to the facts not in dispute including arguments as to the relevance of any particular fact and the legal consequences of any set of facts. At this stage, the parties are to confine themselves to identifying facts and factual disputes. Arguments not specifically aimed at identifying such facts are to be avoided now, but will be entertained at a later time.

CBG has requested relief with respect to the necessity to file exhibits. While its request is vague, we believe a ruling on this matter is necessary. The Board sees no need to file and serve copies of documents to which citation is made which have already been filed and served in this proceeding, or which are published material readily available from NRC or other public sources. Other material should be filed and served.

Because the procedures which we have adopted are novel and have not been addressed by the parties, the parties are afforded an opportunity to move for reconsideration. Should such a motion be filed, the Board will attempt to dispose of it by telephone conference call.

The procedures which we hereby adopt moot CBG's request for a six-month extension of time to respond to Staff's and UCLA's motions. However, a new schedule must be adopted. That schedule is set forth in the following order.

ORDER

In consideration of the foregoing, it is this 22nd day of October, 1982,

ORDERED

1. CBG's motion to summarily dismiss Staff's and UCLA's motions for summary disposition or for alternative relief is *denied*.

2. Not later than five days after service of this Memorandum and Order, any party may move for reconsideration thereof.

3. Not later than ten days after service of this Memorandum and Order, UCLA, Staff, and CBG are to furnish citations to the lists of material facts which each has submitted with its motion for summary disposition. Additionally, UCLA is to indicate which of its specific facts apply to which contention.

4. Not later than 20 days following service of the material required by Paragraph 3, above, each party opposing a motion for summary disposition is to respond by indicating which facts recited by movant it agrees are not in dispute and which facts it maintains are in dispute. With respect to the latter facts, opponents are to furnish citations to documents which they maintain establish that a dispute

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exists. Opponents also are to submit a list of facts, broken down by contention and with citations, which they maintain are relevant to a contention, not listed by movant, and may be in dispute. Argument is to be directed solely to the question of whether a given fact is in dispute.

5. Citations to documents which have not been previously filed and served in this proceeding or which are not published material readily available from NRC or another public source are to be accompanied by a copy of the cited document. Citations to lengthy documents shall include appropriate page and/or paragraph references.

6. Further proceedings on the motions for summary disposition will be scheduled in a future order.

THE ATOMIC SAFETY AND
LICENSING BOARD

Emmeth A. Luebke
ADMINISTRATIVE JUDGE

Oscar H. Paris
ADMINISTRATIVE JUDGE

John H Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman
Gustave A. Linenberger, Jr.
Dr. E. Leonard Cheatum

In the Matter of **Docket No. 50-466-CP**

HOUSTON LIGHTING AND POWER COMPANY
(Allens Creek Nuclear Generating Station, Unit 1)

October 28, 1982

ORDER

(Granting Applicant's Motion for Termination of Proceeding)

Having previously notified the Board on August 27, 1982 that it had cancelled plans to construct the Allens Creek Nuclear Generating Station, on October 6, 1982, Houston Lighting and Power Company simultaneously filed a Withdrawal of Application and a Motion for Termination of Proceeding.

On October 15 and October 17, 1982, the NRC Staff and Intervenor John Doherty responded respectively that they had no objection to the granting of the motion.

Absent objections, the Board grants the Motion for Termination of Proceeding and permits the withdrawal of the application.

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Judge Cheatum concurs but was unavailable to sign this Order.
IT IS SO ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

Gustave A. Linenberger, Jr.
ADMINISTRATIVE JUDGE

Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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Cite as 16 NRC 1401 (1982) **LBP-82-95**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Charles Bechhoefer, Chairman
Dr. Frederick P. Cowan
Dr. Jerry Harbour

In the Matter of	**Docket Nos. 50-329-OM&OL** **50-330-OM&OL**
CONSUMERS POWER COMPANY **(Midland Plant, Units 1 and 2)**	**October 29, 1982**

The Licensing Board accepts a portion of a new contention founded upon information in the Staff's recently issued Final Environmental Statement.

NEPA: COST-BENEFIT BALANCE

Where the cost-benefit balance appearing in the Final Environmental Statement (FES) reflects modifications to the benefit, but not the cost, components of the balance appearing in the Draft Environmental Statement (DES), the entire cost-benefit balance in the FES is considered to be new information for purposes of ruling on contentions assertedly based on new information in the FES.

NEPA: FINAL ENVIRONMENTAL STATEMENT

There is no requirement that any quantum of supporting data be provided in the FES.

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NEPA: COST-BENEFIT BALANCE

"Sunk costs" are not appropriately considered in an operating license cost-benefit balance. They should not be utilized with respect to either the cost or the benefit side of the balance.

MEMORANDUM AND ORDER

(New Contention of B. Stamiris)

On August 24, 1982, Ms. Barbara Stamiris, an intervenor, submitted a new contention for the OL portion of this consolidated OL-OM proceeding. The contention raises several questions concerning the validity of the cost-benefit balance appearing in the Staff's Final Enviromental Statement (FES). As a result of our Memorandum and Order dated September 2, 1982, which extended the time within which parties could file new contentions (or supplement earlier contentions) based on new information in the FES, Ms. Stamiris filed a timely addendum to her new contention on September 13, 1982. On September 23 and 28, 1982, the Applicant responded to the new contention and the addendum, respectively, opposing the admission of the entire contention. In a consolidated response to both the contention and the addendum, filed on September 28, the Staff offered no objection to a portion of the contention but opposed the addendum. On October 15, 1982, in accordance with our Order of October 5, 1982, Ms. Stamiris replied to the responses of the Applicant and Staff. For reasons set forth below, we admit a portion of Ms. Stamiris' new contention.

The contention reads as follows:

> I contend that the new cost production, cost savings analysis of the FES, represented by revised table 2.1 (p. A-32) and the revised cost/benefit analysis (p. 6-4) and revised economic statements derived therefrom do not accurately and fully represent the cost/benefit balance of the Midland plant to the public, and should therefore not be accepted as presented.

In support thereof, Ms. Stamiris sets forth six bases. The addendum to the contention in effect sets forth another basis. We shall discuss each basis *seriatim*.

1. At the outset, however, we turn to the Applicant's claim that each of the costs challenged by Ms. Stamiris (either for accuracy or for failure of inclusion) appeared or failed to appear (as the case may be) in the Draft Environmental Statement (DES) and hence does not constitute new information appearing in the FES. While the Applicant's statement is true with respect to the precise costs listed, the overall cost-benefit balance in the FES is different from that in the DES — primarily because the benefits have been enhanced. As Ms. Stamiris points out, seven of the eight components of the benefits portion of the analysis increased, while the production costs remained the same. Moreover, both the Applicant and

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Ms. Stamiris submitted comments relating to the cost-benefit balance in the DES (Applicant, comment numbers 3, 13, 16-19, 99-101, 104-107, as designated in FES; Ms. Stamiris, comment number 2). Changes were made in the FES cost-benefit balance to accommodate many of the Applicant's proposed changes, but no changes were made to reflect Ms. Stamiris' criticisms. *Cf.* pp. 9-16, 9-20, A-28, A-30 and 31, and A-47 and 48 of the FES with pp. 9-38 and A-95 and 96. In short, we regard the entire cost-benefit balance, as summarized in Table 6.1 of the FES, to be new information, inasmuch as many of its components differ markedly from those in the cost-benefit balance summarized in Table 6.1 of the DES. *Cf. Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 468 n.14 (1982).

With that in mind, we turn to the various bases relied on by Ms. Stamiris to support her contention.

2. The first is the asserted use of "unrepresentative and inconsistent" methodologies for determining production costs and benefits (alleged cost savings). The Staff does not object to this basis as support for the contention. The Applicant's opposition is founded upon (1) disagreement with the merits of some of the allegations, and (2) its claim that the cost-benefit balance in the FES employed the same methodology as in the DES. At this stage of the proceeding we cannot reach the first assertion and, for the reasons previously stated, we do not accept the second. Although the same methodology may have been employed, the increases in benefits have skewed the results of the cost-benefit balance to the extent that, if Ms. Stamiris' claims are accurate, the balance currently appearing in the FES would be inaccurate and misleading. We accept this basis for the contention (modified to incorporate the corrected figures which Ms. Stamiris indicates she accepts).

3. Ms. Stamiris' second basis is that there is a lack of supporting data for production cost estimates. There is no requirement, however, that any quantum of supporting data be provided in the FES. Moreover, as the Applicant and Staff point out, Ms. Stamiris does not here claim that the production cost estimates are inaccurate. We therefore reject the second basis. We note, however, that the accuracy of replacement energy costs which the basis cites may be considered under bases 1 and 3, and that supporting data (if any) for the production cost estimates appearing in the FES would be a proper subject for discovery.

4. As her third basis, Ms. Stamiris claims that the reliance of the FES on cost savings as one of the benefits of plant operation is invalid. The Staff offers no objection to this basis. The Applicant asserts that cost savings were utilized in the DES and therefore that Ms. Stamiris' contention is untimely. We reject that position on the ground that the alleged cost savings set forth in the FES are considerably greater than in the DES and hence constitute new information. The Applicant also asserts that Ms. Stamiris' claim lacks basis but in support thereof provides only arguments going to the merits of the contention, upon which we

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cannot rule at this stage of the proceeding. We therefore accept this basis for the contention.

5. Ms. Stamiris' fourth basis for the contention is that the cost savings increase is not justified — *i.e.*, is inaccurate, as a result of an overemphasis on purchased power. The Staff offers no objection to this basis. The Applicant asserts a lack of basis and specificity, as well as untimeliness. We view this basis as integral to the third basis for the contention and accept it on the same grounds. We note, however, that we are not accepting any claim based on need for power or (for the reasons we set forth with respect to the second basis) for an alleged lack of supporting data.

6. Ms. Stamiris' fifth and sixth bases assert that cost considerations allowed one party cannot be denied another party and that a valid cost-benefit balance must take into account all costs. In substance, Ms. Stamiris is claiming that increased costs of construction have been taken into account in assessing benefits but not costs, and that a valid cost-benefit balance must consider increased costs of construction beyond those estimated at the construction permit stage.

In our Prehearing Conference Order of August 14, 1982, LBP-82-63, 16 NRC 571, we rejected a claim by Ms. Stamiris (in her proposed contention 1.a) that increased costs of construction should be taken into account in assessing the costs of plant operation. We relied particularly on a statement by the Commission in a recent rulemaking (47 *Fed. Reg.* 12940, 12942 (March 26, 1982)), as well as the earlier ruling by the Commission that "sunk costs" are as a matter of law not appropriately considered in an operating license cost-benefit balance. *Cf. Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 534 (1977). The Applicant and Staff assert that Ms. Stamiris, through her fifth and sixth bases, is merely reasserting the contention which we rejected, and they both urge us to reject the fifth and sixth bases of the new contention for the same reasons we rejected the earlier contention 1.a.

In support of her fifth and sixth bases, Ms. Stamiris has advanced several new arguments. She first claims that the Commission's rulemaking statement incorporates sufficient flexibility to permit consideration of increased construction costs in situations (as here) where such increases assertedly are exceptionally great. We disagree. As we understand it, the flexibility to which Ms. Stamiris is referring permits an exception to the general proscription against considering need for power and alternative energy source issues at the OL stage of review only upon a showing of "special circumstances" in accordance with 10 CFR §2.758. The Commission has indicated that such a showing would be of the nature "that an alternative exists that is clearly and substantially *environmentally* superior." 47 *Fed. Reg.* 12941, emphasis supplied. In other words, increased costs by themselves would not constitute a special circumstance, irrespective of their magnitude. For that reason, we do not accept Ms. Stamiris' reading of the Commission's rulemaking language.

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There is more substance to Ms. Stamiris' next argument, to the effect that increased costs have been used to enhance the benefits of the plant and hence should also be factored into the cost side of the balance. As Ms. Stamiris points out, if that were the case, the analysis would fail to present a "fair assessment to the public" of the benefits and costs of the facility. On the other hand, sunk costs are not to be considered in an OL cost-benefit balance. As the Commission stressed in its *Seabrook* decision, CLI-77-8, *supra*, the Federal action being considered in an OL proceeding such as this one is the licensing of operation of an already constructed facility, not the construction of the facility. 5 NRC at 541. "Money spent is spent." *Id.* at 534. The increased construction costs have already been incurred. The only question is who will pay those costs — the ratepaying public or the utility's shareholders. The determination of how those costs will be allocated, however, is not within the purview of NRC. Rather it is a question for state, local or regional determination.

That being so, we do not believe that we can consider increased construction costs in our review of the OL cost-benefit balance. But, for reasons pointed to by Ms. Stamiris, we do not believe that the Staff can base any portion of the benefit side of the cost-benefit balance in the FES upon increases in construction costs. We are thus accepting bases five and six, but only to the extent they assert that the FES improperly relies on increased costs to justify any of the benefits underlying the cost-benefit balance. In that connection, we initially perceive at least two potential problems in this regard. First, the capital costs portion of replacement power costs should not be considered, for the same reason we consider capital costs inappropriate for an OL cost-benefit balance — *i.e.*, "money spent is spent." It is not for us to determine the group in society which should bear those costs. Second, we have considerable doubt whether tax payments (based on either high or low levels of construction costs) can be given any consideration in terms of the benefits emanating from the facility. *See, e.g., Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-179, 7 AEC 159, 177 (1974); *Arizona Public Service Company, et al.* (Palo Verde Nuclear Generating Station, Units 1, 2 and 3), ALAB-336, 4 NRC 3, 4 (1976); *Illinois Power Company* (Clinton Power Station, Unit Nos. 1 and 2), ALAB-340, 4 NRC 27, 46 (1976). Whether any weight has been given to items such as local taxes is, of course, a matter going to the merits of Ms. Stamiris' claim and hence must be left open for future consideration.

7. The addendum to the contention constitutes a seventh basis. By its terms, it is based on a lack of information on dewatering costs in the DES, as well as the FES. Technically it should therefore be considered to be untimely. Given the changes to the FES cost-benefit balance which we have described, however, we decline to reject the addendum on that ground. Furthermore, acceptance of the addendum would enable us to assess more accurately the cost-benefit balance in the FES than would otherwise be the case and hence will improve the record in this regard

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Accordingly, we accept the addendum as an additional basis for Ms. Stamiris' cost-benefit contention.

8. In sum, we are accepting Ms. Stamiris' contention, as supported by the first, third, fourth, and fifth and sixth (to the extent indicated) bases, and the addendum. In rewritten form, the contention is set forth in the appendix to this opinion. As previously established for new contentions, discovery requests must be filed within 15 days of service of this Memorandum and Order (*i.e.*, by November 18, 1982).

Based on the foregoing, it is, this 29th day of October, 1982
ORDERED

1. That Ms. Stamiris' new FES cost-benefit balance contention, as set forth in the Appendix to this Memorandum and Order, and as limited by the earlier discussion herein, is hereby *accepted*.

2. That discovery requests on this contention must be filed within 15 days of service of this Memorandum and Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

APPENDIX

Cost-benefit balance contention (includes as subparagraphs (f) and (g) portions of related contentions of Ms. Stamiris which have previously been admitted):

> The new production-costs and cost-savings analyses of the FES, represented by revised table 2.1 (p. A-32) and the revised cost/benefit analysis (p. 6-4) and revised economic statements derived therefrom do not accurately and fully represent the cost/benefit balance of the Midland plant to the public, and should therefore not be accepted as presented, for the following reasons:

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(a) The cost-benefit analysis employs unrepresentative and inconsistent methodologies in deriving production cost estimates and benefits.

(b) The cost-benefit analysis improperly relies on cost savings as a benefit of operations.

(c) Even if the cost-benefit analysis may utilize cost savings as a benefit, the cost savings set forth in the FES are unjustified, in that they are based to too great an extent on purchased power.

(d) The cost-benefit analysis improperly factors in increased construction costs in computing the benefits of the facility, and improperly relies on local taxes as a benefit.

(e) The cost-benefit analysis improperly omits dewatering operating expenses as a cost of operation.

(f) The cost of decommissioning in the cost-benefit analysis is understated, in that it estimates only $235 million for decommissioning while CPC estimated about $500 million for Big Rock and Palisades in 1980.

(g) The cost-benefit analysis estimates about a 36-year lifespan for the facility despite the shorter life expectancy and/or derated capacity of Unit I due to its defective weld (SER, p. C-10).

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Gary L. Milhollin, Chairman
Dr. David R. Schink
Dr. Peter A. Morris

In the Matter of **Docket No. 50-341**
(Operating License)

THE DETROIT EDISON COMPANY, *et al.*
(Enrico Fermi Atomic Power Plant,
Unit 2) **October 29, 1982**

In this Initial Decision, the Director of Nuclear Reactor Regulation is authorized to issue a full-power operating license. The Board found no merit in the intervenor's contentions, which alleged that site security was inadequate during construction, that quality assurance was inadequate, that a prime contractor was improperly replaced, that there were flaws in construction, and that the evacuation route was inadequate for residents of a small community near the reactor. The Board denied an untimely petition by Monroe County, Michigan, to intervene in the proceeding.

EMERGENCY PLANNING: EVACUATION ROUTES

An evacuation route may be adequate despite the fact that persons using it must travel toward the reactor for a short distance before traveling away from the reactor.

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RULES OF PRACTICE: UNTIMELY PETITIONS TO INTERVENE

In judging an untimely petition under 10 CFR §2.714(a), a petition which lacks good cause for delay, will broaden the issues, and will delay the proceeding, will be denied, despite the fact that no other party will represent the petitioner's asserted interest.

APPEARANCES

Applicants, Detroit Edison Company, *et al.*
Harry H. Voigt and **L. Charles Landgraf, Esquires**
LeBoeuf, Lamb, Leiby & MacRae

Citizens for Employment and Energy
David E. Howell and **Kim Arthur Siegfried, Esquires**

Nuclear Regulatory Commission Staff
Colleen P. Woodhead and **Daniel T. Swanson, Esquires**

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INITIAL DECISION

I. INTRODUCTION AND SUMMARY

1. This is an initial decision on an application to operate a nuclear power reactor. The Applicants are the Detroit Edison Company, Northern Michigan Electric Cooperative, Inc., and Wolverine Electric Cooperative, Inc. The reactor, Enrico Fermi Atomic Power Plant, Unit 2, is located on the western shore of Lake Erie in Frenchtown Township, Monroe County, Michigan. A permit to construct the reactor was granted in 1972.

2. The parties to this case are: a) the Applicants; b) the Staff of the United States Nuclear Regulatory Commission; and c) Citizens for Employment and Energy (CEE), which contests the application and was admitted as an intervening party on January 2, 1979. As a result of CEE's intervention, this Atomic Safety and Licensing Board was appointed by the Nuclear Regulatory Commission to conduct a hearing. CEE advanced several contentions when it intervened. However, it withdrew all but three at a prehearing conference held in July of 1981. Of those three, one was dismissed later on summary disposition. An evidentiary hearing on the two remaining contentions was held from March 31, 1982 to April 2, 1982 in Monroe, Michigan. Those two contentions alleged that security at the site was inadequate during construction, that the quality assurance program was inadequate, that quality assurance records were destroyed or lost, that a prime contractor was improperly replaced, that there were flaws in construction, and that, in the event of an accident at Fermi-2, the residents of a small community near the reactor would not have a feasible evacuation route. After the hearing, the Applicants and the NRC Staff filed proposed findings of fact and conclusions of law. CEE did not file proposed findings. After considering the record, we find, for the reasons set forth below, that neither of the contentions has merit. Therefore, we rule in favor of the Applicants.

3. By a motion dated August 27, 1982, the County of Monroe, Michigan filed a late petition to intervene in this proceeding. That petition is denied for the reasons set forth in ¶¶58-78 below.

II. CEE'S CONTENTION 4: INADEQUACIES DURING CONSTRUCTION

4. CEE's Contention 4 was the first of the two contentions litigated. Its language, stipulated by the parties, reads as follows:

(a) There has been an appalling lack of physical security at the construction site since the inception of construction. Given the need for extremely close quality control in the erection of a nuclear plant, this failing could

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well lead to flaws in the structure, through deliberate sabotage or unintentional injury to components.

(b) The Applicant's Quality Assurance Inspection Program has not been executed in conformance with Criterion X of Appendix B to 10 CFR Part 50. Recent reinspections of various materials and workmanship indicate that quality control was inadequate during construction prior to the 1974 shutdown of construction activities at the site. Specifically, CEE identifies:
   (1) large and small bore pipe hangers, and
   (2) welds of safety related components.

(c) The Applicant has not maintained sufficient quality assurance records to furnish evidence of activities affecting quality to comply with Criterion XVII of Appendix B to 10 CFR Part 50 in that records have been destroyed or lost during the course of construction.

(d) Detroit Edison twice replaced the team of supervisors from the first general contractor, Ralph M. Parsons Co., then terminated its contract with Parsons and hired a second firm, because Parsons' employees refused to sacrifice quality control in order to expedite the construction schedule.

(e) Specific flaws in construction can be identified, among them:
   (1) Excessive water in the reactor hole which caused the concrete base to crack severely, a problem purportedly remedied by patching.
   (2) Hairline cracks in structural steel surrounding the dry well.

5. The allegations in this Contention will be discussed separately under the following headings: first, whether there was a lack of physical security at the site during construction; second, whether quality assurance was adequate during construction; third, whether Applicants maintained adequate quality assurance records during construction; fourth, whether the Applicants replaced the Ralph M. Parsons Company because Parsons' employees refused to sacrifice quality control; and fifth, whether there were specific flaws in construction. Each of these headings will be taken up in order.

A. Physical Security at the Site During Construction

6. Contention 4(a) alleges that physical security at the site was inadequate during construction. CEE's testimony on this point was provided by Mr. Frank Kuron, who was employed as an ironworker at the Fermi-2 construction site. Kuron, ff. Tr. 367 at 1. His testimony on physical security consisted of the following statements: First, he stated that "there was a general lack of security personnel present at the site during construction"; second, he stated that the general

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lack of security was "indicated by several fires which occurred," which "may not have been accidental"; third, he stated that there was a great deal of theft at the site; fourth, he stated that there was one incident in which several hundred gallons of fuel oil were spilled; and fifth, he concluded that there was a general lack of interest in security at the site. *Id.* at 3. This was the extent of his testimony on physical security at the site during construction.

7. The Applicants' witnesses on this point were Stuart H. Leach and Donald Bluhm. Mr. Leach is Senior Administrator — Security, at Detroit Edison. Leach, ff. Tr. 259 at 1. Mr. Leach was accompanied on the witness stand by Mr. Bluhm, who is Director — Security Department, at Detroit Edison. Mr. Leach described the security measures which the Applicants have employed at the site during construction. He stated that when construction began at Fermi-2, the site was guarded by personnel from the adjacent facility at Fermi-1. Leach, *supra*, at 3. When the turbine generator and other complex components arrived at the site in 1976, security was increased. *Id.* During this general period a perimeter fence was installed, lighting was improved, personnel identification was required, the patrol checkpoint system was improved, a new communications system was installed, and "no trespassing" signs were added. *Id.* at 3-4.

8. Mr. Leach admitted that "like any construction site, Fermi-2 has experienced tool thefts and vandalism. . . ." *Id.* at 6. However, he stated that he knew of no incident in which any person had attempted to circumvent site security with the intention of damaging the Fermi-2 reactor. *Id.* at 7. He also stated that he knew of no intrusion which would compromise the integrity of any structure or safety component at the site. *Id.* at 6. He said most trespasssers were rock collectors, bird watchers, hunters, and fisherman, who simply wandered into the site. *Id.* at 10.

9. The Nuclear Regulatory Commission Staff also presented testimony on this point. The Staff's witness was Mr. Bruce Little, Senior Resident Inspector for Fermi-2. Mr. Little stated that the Applicants have had a physical security program in effect at the site since the beginning of construction, that the program controls the access and egress of personnel and materials, and provides fire and security patrols 24 hours a day. Little, ff. Tr. 270 at 15. He stated that he did not know of any incident of sabotage which might affect quality control at the site. *Id.*

10. Mr. Little also testified that the NRC Staff does not require any specific security precautions for reactor construction sites because there is no nuclear fuel at the site and thus "no perceived threat to the public health and safety by exposure to radiation." *Id.* at 14-15. However, Mr. Little also stated that before the Fermi-2 reactor may be operated, the Applicants will conduct a comprehensive test program and the Staff will review that program and its results to assure that the reactor meets NRC requirements. *Id.* at 15. One goal of this testing and inspection program is to detect any discrepancy which might be due to vandalism or sabotage. *Id.* at 15-16. Obviously, there can never be *absolute* assurance that no deficiency

will have occurred during construction. The extensive pre-operational and startup testing program is designed with this fact in mind and will, we assume, be carried out so as to realize maximum benefit. We believe this to be especially important at Fermi-2 because of a) the long construction period, b) the change in construction contractors, and c) the Applicants' lack of experience in operating a boiling water nuclear power plant.

11. When one compares Mr. Kuron's testimony with that of Mr. Leach and Mr. Little, it is clear that Contention 4(a) must fail. Mr. Kuron's testimony consists simply of his general statements that there were inadequate personnel at the site, that there were suspicious fires, that there were thefts of tools, and that fuel oil was spilled. None of these statements relate to the reactor in its present condition. Whether, in the past, there were too few guards, suspicious fires, thefts of tools, and spilled oil is of little importance unless one links those matters to the present condition of the reactor as it might affect public health and safety. There is no evidence supplying such a link. Neither Mr. Kuron nor CEE tendered any evidence showing how many guards there were, how many or what kind of fires there were, how many thefts of tools there were, or any significant facts about the oil spill. The only detailed testimony describing site security was that of Messrs. Leach and Little. They testified that site security was adequate. In view of this latter testimony, which we accept as accurate and convincing, we must find that the allegations in Contention 4(a) are not supported by the evidence. Also, we find that none of the allegations was linked to the present condition of the reactor. For these reasons, Contention 4(a) must fail.

B. The Quality Assurance Program

12. Contention 4(b) alleges inadequacies in the Applicants' quality assurance inspection program. Specifically, Contention 4(b) alleges that quality control was inaqeguate before 1974 with respect to pipe hangers, and with respect to welds of safety-related components.

13. Mr. Kuron testified that a series of pipe hangers were improperly installed in the turbine building. Kuron, ff. Tr. 367 at 4. However, he admitted that NRC had identified that deficiency some time ago, and that NRC had directed the Applicants to correct it. *Id.* Mr. H. M. Wescott, who is a project inspector, testified on behalf of the NRC Staff. He stated that on February 15, 1979, an investigation was begun at the Fermi-2 site as a result of statements Mr. Kuron made at a prehearing conference. Wescott, ff. Tr. 270 at 17. On February 8 and 9, 1979, Mr. Kuron was interviewed by Messrs. Robert Marsh (NRC Investigator, Region III) and Harry Shannon Phillips (NRC Reactor Inspector, Region III). *Id.* Mr. Kuron provided information on twelve subjects which he considered to be important, but he indicated that much of the information was second or third hand. *Id.* On February 20, 1979, Mr. Kuron visited the Fermi-2 site, at the request of the

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NRC, where he further defined his allegations during a walking tour of the facility. *Id.* at 17-18. He was accompanied on the tour only by NRC inspectors; none of the Applicants' employees was present. Tr. 369. The NRC Staff then expanded the list of Mr. Kuron's allegations to 20 and investigated each item on the list. Wescott, *supra*, at 18. The results of that investigation are contained in *Report No. 50-341/79-04, United States Nuclear Regulatory Commission, Office of Inspection and Enforcement, Region III* (July 27, 1979). *Id.* at Appendix A. With respect to the pipe hangers, the investigators found that the allegation concerning improper installation was valid. *Id.* at 19. However, the NRC Staff had already identified that deficiency nearly a year before the investigation, and corrective measures to eliminate the deficiency had been ordered and had already begun. *Id.* Mr. Tullio A. Alessi, who is Director, Project Quality Assurance for the Enrico Fermi-2 Project, testified for the Applicants. Mr. Alessi stated that when construction resumed after the halt in 1974, the Applicants set up a shop to refurbish hangers which had shown signs of deterioration. Tr. 291. The hangers were sandblasted, inspected, repainted, and reassembled. *Id.* Any which were judged below acceptable standards were scrapped. Tr. 304. In view of the uncontroverted evidence that the deficiencies in pipe hangers had been detected by NRC before Mr. Kuron made his allegations, that the deficiencies had been ordered to be remedied, and were and are being remedied, there is no merit to the contention that quality control of pipe hangers is still a matter of concern at Fermi-2.

14. With respect to welds of safety-related components, Mr. Kuron testified that the following deficiencies existed: a) nozzles located in the main condenser in the turbine building were welded with the wrong weld material; b) there was improper welding of the inlet of the main steam isolation valve; c) improper weld material was used in the chemical cleaning and flushing system; and d) improper weld material was used to weld pipe whip restraints. Kuron, ff. Tr. 367 at 4-5. On cross-examination, Mr. Kuron admitted that he had reported all these matters to the NRC investigators at the time of the investigation in February of 1979. Tr. 369-370. Mr. Wescott confirmed, on behalf of the NRC Staff, that all of these allegations were investigated at that time. Wescott, ff. Tr. 270 at 19. In the case of the nozzles in the main condenser, the investigators were unable to discover from Mr. Kuron which welds he thought were deficient. *Report No. 50-341/79-04, supra*, ff. Tr. 270 at Appendix A, p. 17. There were so many pipes in the condenser area that Mr. Kuron could not be sure which contained the deficient weld. *Id.* The inspector, therefore, examined the drawings showing all the pipes in that area; but he discovered that none of the drawings showed safety-related piping. *Id.* Thus, the investigator determined that the alleged deficiency did not raise an issue of public health and safety. *Id.*

15. In the case of the main steam isolation valve, the investigators identified the weld which was alleged to be defective. *Id.* at 18. The investigators reviewed the weld records in detail and discovered that although a special welding procedure

had been used to enable a spool piece to be fitted more accurately to the main steam isolation valve, the welds had been examined and accepted by the appropriate personnel. *Id.* at 19. The investigators did not find any deviation from applicable requirements. *Id.*

16. In the case of the chemical cleaning and flushing system, Mr. Kuron could not inform the investigators of any specific weld where improper materials might have been used. *Id.* at 20. The investigators nevertheless looked at that system, and determined that it was not safety-related. *Id.* Thus, the investigators did not find any deviation from applicable requirements. *Id.*

17. In the case of the pipe whip restraints, the investigators identified the particular weld. *Id.* They identified the filler material which was specified, identified the filler material which was indicated to have been used, and determined that they were the same material. *Id.* They also determined from records that a "1 inch linear indication was discovered adjacent to [the weld in question]. . . ." *Id.* at 21. The Applicants' response to the "linear indication" was to "excavate the indication [to] its full depth and reweld." *Id.* The inspectors also asked the Applicants to analyze a sample of this weld to insure that no stainless steel was present. *Id.* The investigators found no deviation from applicable requirements. *Id.*

18. The above evidence shows that there is no basis for concern about the welds of the safety-related components listed in Mr. Kuron's testimony. All of those welds were investigated thoroughly by the NRC Staff. Neither the nozzles in the main condenser nor the chemical cleaning and flushing system was found to be safety-related. The weld at the main steam isolation valve was inspected and found adequate, and the same was true of the weld identified in the pipe whip restraints. We accept that evidence as accurate and convincing and we find that it shows that the allegations in Contention 4(b) concerning welds of safety-related components are without merit.

19. When he testified, Mr. Kuron also mentioned several other allegations which he had presented to the NRC investigators in 1979. He said that a globe valve and its piping could not be installed because of interference with a concrete wall; he said that the drywell area contained dirt and debris; he said that when a crew installed reflective shielding they left screws out and left gaps between the shielding panels; he said that stop valves for the turbine generators had been improperly stored; he said that certain concrete anchors were improperly installed; and he said that there were large voids in the grouting of the wall of the sacrificial shield. Kuron, ff. Tr. 367 at 5-6. These items were not specifically mentioned in CEE's Contention 4. However, they could fall within a broad interpretation of part (b) of that Contention. Part (b) alleges generally that the Applicants' quality assurance program was inadequate. Mr. Kuron admitted that all of these additional allegations were brought to the attention of the NRC investigators in 1979. *Id.* at 5; Tr. 370. The investigators found that the globe valve did require a design change in

order to be installed, but that the change was properly made. *Report No. 50-341/79-04, supra,* ff. Tr. 270 at Appendix A, p. 14. They found that the drywell contained some dust produced by a sandblasting operation, but they did not find the overall cleanliness of the drywell to be below acceptable standards. *Id.* at 15. They found that gaps did exist between the panels of the reflective shielding, but they also found that the shielding was not related to safety, so no violation of standards was involved. *Id.* They also determined that the stop valves for the turbine generators were not related to safety. *Id.* at 17. With respect to concrete anchors, Mr. Kuron could not point out any specific ones which were defective, so the investigators reviewed numerous reports describing tests of these anchors. *Id.* at 21. The investigators also observed the actual testing of four anchors at a particular installation. *Id.* The investigators could not find anything wrong with the anchors. *Id.* at 22. In 1979, in response to Bulletin 7902 from NRC's Office of Inspection and Enforcement, the Applicants reinspected all of the Class 1 pipe hangers at Fermi-2 which used the type of anchor about which Mr. Kuron had expressed concern. Tr. 508-510. The failure rate of these anchors was low. Tr. 509-510. Finally, the investigators examined the grouting program for the wall of the sacrificial shield. They identified areas which had not been filled with grout. *Report No. 50-341/79-04, supra,* at 23. The investigators determined that Mr. Kuron's allegations on this point were valid and they cited the voids as an item of noncompliance with NRC regulations. *Id.* at 4, 24. Mr. Alessi testified that the voids were not detected in Edison's original inspection of the sacrificial shield because the inspector had not verified two locations which were difficult to reach. Tr. 333. As a result of this discovery, the Applicants stated to the investigators that the Applicants intended to reinspect the wall to insure that all of the shield's compartments had been completely filled with grout. *Report No. 50-341/79-04, supra,* at 24. Mr. Walter M. Street, Applicants' Supervising Engineer — Civil, of the Enrico Fermi-2 Project, testified that the entire sacrificial shield was in fact subsequently reinspected. Tr. 332. Mr. Alessi testified that the void areas had subsequently been filled with grout, and that it had been determined that there were no more void areas. Tr. 333. Mr. Little testified that this item had then been reinspected by the NRC Staff. Little, ff. Tr. 270 at 18-19. As a result of that reinspection, the Staff deemed this item of non-compliance to have been resolved. *Id.*

20. From the above testimony, our finding must be that none of Mr. Kuron's additional allegations forms an adequate basis for a present concern about the safety of Fermi-2. With respect to the reflective shielding and the stop valves, the NRC investigators found that those items were not safety-related. With respect to the globe valve, the drywell, and the concrete anchors, the investigators found no evidence of noncompliance with NRC regulations. The sacrificial shield was the only item in which noncompliance was found. The investigators' *Report No. 50-341/79-04, supra,* together with the testimony supporting it, presents the

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investigators' methods in detail. We accept the Staff's and Applicants' testimony on these items as accurate and convincing. This testimony shows that no factual basis exists for any of the additional allegations in Mr. Kuron's testimony on Contention 4(b).

21. Contention 4(b) also alleges broadly that, before a halt in construction in 1974, the Applicants' quality assurance program was not performed in conformance with NRC regulations. CEE offered no testimony to prove this allegation other than the specific allegations discussed above. Kuron, ff. Tr. 367 at 3. Mr. Kuron did *not* allege that there were inadequacies in the present, or recent, quality assurance program; he only alleged that there were inadequacies during the early stages of construction. *Id*. Mr. Alessi testified on this point on behalf of the Applicants. He stated that the inspection program at Fermi-2 is carried out according to a manual which corresponds to Criterion X of Appendix B to 10 CFR Part 50; that this manual has been reviewed by the NRC; that the manual prescribes inspection procedures for all safety-related work at Fermi-2; that when a deficiency is found as a result of an inspection a nonconformance report is prepared and the deficiency corrected and then reinspected; and that the entire process is audited and reviewed by NRC inspectors. Alessi, ff. Tr. 262 at 1-3. Mr. Little testified on behalf of the NRC Staff. He described the Staff's methods of auditing the Applicants' inspection program: he stated that the Applicants' inspection program has been in effect since the beginning of construction of Fermi-2; and he stated that the Applicants' program was in accordance with NRC regulations. Little, ff. Tr. 270 at 7-13. We find that the testimony on this point by the Applicants and NRC Staff shows that the Applicants' inspection program was adequate during the early stages of construction. CEE offered no evidence, other than the broad allegation already mentioned, to the contrary. Therefore we find that CEE's general allegation concerning the adequacy of the Applicants' quality assurance program to be without merit. We should point out that there would be more reason for concern about the Applicants' program had no construction deficiencies been found. Deficiencies are, as a practical fact of life to be expected. The purpose of inspection, and of quality control and assurance programs, is to assure that deficiencies are corrected before the facility operates. As shown in ¶¶13 and 17 above, deficiencies were found at Fermi-2 and were corrected.

22. For the reasons stated in ¶¶13-21 above, we find that none of the several allegations in Contention 4(b) has any merit.

C. Loss or Destruction of Quality Assurance Records

23. Contention 4(c) alleges that the Applicants have not maintained adequate quality assurance records during the period of construction, because some of these records have been destroyed or lost. Mr. Kuron testified that Detroit Edison's

officials ordered the destruction of two trailer loads of records, which were believed at the time to be quality assurance records. Kuron, ff. Tr. 367 at 3. He also testified that quality assurance records were destroyed in a second fire on December 16, 1978, and that this latter fire was reported to NRC as being less serious than it was. *Id.* at 4.

24. Mr. Alessi testified that Edison has in fact maintained all required quality assurance records. Alessi, ff. Tr. 262 at 5. He said that Edison protects such records against loss by safekeeping in fireproof facilities. *Id.* at 6. He stated that Edison is not aware of any fire which burned trailer loads of quality assurance records but that in 1974, when the offices of some of Edison's contractors were cleared out, personal file copies of documents such as letters and drawings were destroyed by burning. *Id.* at 7. He said that these documents were not quality assurance records. *Id.* Mr. Alessi also testified that on December 15, 1978 a faulty gas heater in Building 45A at the Fermi-2 site caused a fire which damaged several quality assurance records which had been left on an inspector's desk. *Id.* Most of the records in the office were in a steel cabinet and were not damaged. *Id.* Of the records which were lost, many could be reconstructed from master files. *Id.* Two lost records of weld tests could not be reconstructed, however, so the welds were retested to make sure they were acceptable. *Id.*

25. Mr. Harry Shannon Phillips, NRC's Construction Project Inspector for Region III, presented the Staff's testimony on this point. He stated that the allegations concerning the two fires were brought to the attention of the NRC investigators at the time of the investigation in February, 1979. Phillips, ff. Tr. 270 at 20. Mr. Phillips was responsible for investigating those allegations at that time. *Id.* The investigators interviewed a number of persons at the construction site and also checked to see whether required records were complete and could be retrieved. *Id.* at 21. They also reviewed NRC inspection reports dating back to 1972 to determine whether NRC had noted previously that required records were missing, incomplete, or irretrievable. *Id.* They discovered only that certain personal records, working drawings, and so forth had been burned after one of Detroit Edison's contractors had left the site. *Id.* None of the documents burned were quality assurance records. *Id.* With respect to the fire in Building 45A, the investigators interviewed several persons who saw the results of the fire. *Id.* at 22. These persons gave an account which matched Edison's report of the fire to NRC. *Id.* Only a small number of documents were burned in that fire, and many of those could be reconstructed. *Id.* In the case of a few weld inspection records which could neither be saved nor reconstructed, the welds were reinspected. *Id.* The investigators did not find any factual basis for either of the allegations concerning the fires. *Id.*

26. In light of the above testimony by Messrs. Alessi and Phillips, which we accept as accurate and convincing, and in light of the lack of any detailed probative evidence by CEE, we find no basis in fact for the allegation that required

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permanent quality assurance records have been lost, or destroyed by fire. Contention 4(c) is therefore without merit.

D. Replacement of the Ralph M. Parsons Company

27. Contention 4(d) alleges that Detroit Edison dismissed the Ralph M. Parsons Company as general contractor "because Parsons' employees refused to sacrifice quality control in order to expedite the construction schedule." Mr. Kuron testified that the first team of managers used by Parsons at Fermi-2 did an efficient job of quality assurance and control. Kuron, ff. Tr. 367 at 8. He said that this led rapidly to their replacement, however, by a second team of Parsons' managers who were less concerned about quality assurance and control. *Id.* Then, he said, Detroit Edison used the halt in construction in 1974 to replace Parsons as general contractor; Edison substituted the Daniel Construction Company, which was less concerned than Parsons about quality assurance and control. *Id.* at 8-9.

28. Mr. William J. Fahrner testified on behalf of the Applicants. He stated that during the time when the Parsons Company was general contractor, Edison did request that two of Parsons' project managers be replaced. Fahrner, ff. Tr. 265 at 3. According to Mr. Fahrner, one was replaced because of his poor attendance at the construction site, and the other was replaced because he could not maintain labor harmony at the site. *Id.* Mr. Fahrner said that neither replacement was based on the manager's attitude toward quality assurance or control. *Id.* Mr. Fahrner said that he was not aware that any of Parsons' employees had ever complained about quality assurance or control. *Id.* With respect to the replacement of Parsons as general contractor, Mr. Fahrner said that during the halt in construction in 1974 Edison's senior management decided that the system of having a general contractor — as Parsons was — was less effective than the system of having a construction manager. Under the latter system a manager who does not perform any direct construction work represents the project owner's interest at the site. *Id.* at 2. Edison selected Daniel International as the construction manager and terminated the contract with Parsons, as Edison had a right to do under the terms of that contract. *Id.* Mr. Fahrner also testified that it was not unusual to replace contractors or supervisors in the course of large projects which extend over several years. *Id.*

29. Mr. Phillips testified on behalf of the NRC Staff. He said that when Mr. Kuron supplied his list of allegations to the NRC investigators in February of 1979, Mr. Kuron did not include any specific allegation about the replacement of the Parsons Company. Phillips, ff. Tr. 270 at 23. Mr. Kuron commented generally about the replacement of Parsons, but he did not identify any specific item. *Id.* at 24. As a result of these general comments, however, the NRC investigators discussed the Parsons matter with Edison's management. *Id.* Edison indicated that its quality assurance and quality control arrangements with Parsons had been

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satisfactory. *Id.* The investigators did not discover any information which might show that Parsons' employees were requested to sacrifice quality control in order to expedite the construction schedule. *Id.* Mr. Phillips also stated that, by the time of the investigation in 1979, the Staff had already performed about fifty inspections of construction activities at Fermi-2, and that during those inspections quality assurance specialists and engineers had reviewed Edison's quality control procedures and their implementation. *Id.* at 24-25. Each of those inspections established that each contractor performing safety-related work had a satisfactory quality assurance program or, if not, the contractor was cited for non-compliance and corrective action was required. *Id.* at 25, 28. We accept the above testimony of Messrs. Fahrner and Phillips as accurate and convincing. In light of that testimony, and in light of Mr. Kuron's failure to supply any detailed support for his general allegation, we find that there is no credible evidence that the Parsons Company was dismissed for reasons related to quality assurance or quality control. Thus, we find that Contention 4(d) is without merit.

E. Specific Flaws in Construction

30. Contention 4(e) alleges certain flaws in construction. Specifically, it alleges that the concrete base of the reactor building cracked during construction, and that the cracks were repaired by patching. It also alleges that hairline cracks developed in the structural steel surrounding the drywell.

31. With respect to the cracks in the concrete base of the reactor building, Mr. Kuron testified that the cracks might allow radiation to leak out of the reactor building, and that the cracks may have impaired the structural integrity of that building. Kuron, ff. Tr. 367 at 7. He also said that Detroit Edison had grouted the cracks to seal the base and prevent infiltration of groundwater. *Id.*

32. Mr. Alessi testified on behalf of the Applicants. He stated that in 1972, after the concrete base had been poured, Edison's inspectors discovered radial and circumferential hairline cracks on its surface. Alessi, ff. Tr. 262 at 9. Also, a small amount of groundwater was seeping into the reactor basement floor. *Id.* Core samples revealed that the cracks were from 6 inches to 3 feet deep. *Id.* The concrete base is 4 feet thick. *Id.* Edison repaired the cracks with non-shrinking grout applied under high pressure. *Id.* at 10.

33. Mr. Phillips testified that Mr. Kuron had reported these cracks to the NRC at the time of the investigation in 1979. Phillips, ff. Tr. 270 at 26. As part of his investigation, Mr. Phillips reviewed a report which Edison had filed with NRC at the time the cracks were discovered and repaired. That report indicated that Sargent and Lundy, the structural designers of the reactor building, performed a thorough analysis of the cracks and concluded that the cracks did not impair the structural strength of the base. *Id.* at 27. Edison's report also indicated that Edison had monitored the width and length of selected cracks to check them for any

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increase and that Edison had monitored the base to discover any new cracks. *Id*. at 28. In addition, the report indicated that in case of an accident, contaminated water could not leak out of the reactor building through the floor unless the water inside the building had reached a height equal to or greater than the pressure head of the groundwater outside, which is about 30 feet under normal operating conditions. *Id*. at 27. Before this height was reached inside the building, the reactor could be shut down and the water processed through the radwaste system. *Id*. Finally, the report concluded that even this leakage could not occur, because the cracks had been satisfactorily repaired. *Id*.

34. In order to verify the success of Edison's repair program, Mr. Phillips reinspected the grouted areas on February 22, 1979; his inspection revealed no evidence of seepage. *Id*.

35. The above testimony by Messrs. Alessi and Phillips shows that the cracks had been discovered and repaired long before Mr. Kuron mentioned them to the NRC investigators in 1979, and long before CEE filed Contention 4(e). The testimony shows that the repairs were satisfactory, and that the cracks do not amount to flaws in the construction of Fermi-2. We find that the evidence does not support CEE's allegation of a construction flaw in the base of the reactor building.

36. With respect to the hairline cracks in the structural steel surrounding the drywell, Mr. Kuron testified that he learned of the cracks in conversations with construction personnel and that after discussing the matter further with NRC inspectors, he believes that the cracks are in steel clip angles welded to plates embedded in the walls of the reactor building. Kuron, ff. Tr. 367 at 8. This is the extent of CEE's testimony on cracks in the structural steel.

37. Mr. Alessi testified that one of Edison's inspectors observed fine cracks in the clip angles referred to by Mr. Kuron. Alessi ff. Tr. 262 at 10. The clip angles are attached to steel plates embedded in the wall of the reactor building, and the clip angles support the ends of girders. *Id*. at Figure 1. Edison discussed the cracks with the NRC Staff, but the Staff determined that they amounted to a normal construction problem and were not reportable. *Id*. at 10. Sargent and Lundy, the designers of the reactor building, evaluated the cracks and concluded that the cracks were caused either by defects in the material from which the clip angles were made, or by excessive welding used to attach the clip angles. *Id*. at 11. At the suggestion of Sargent and Lundy, Edison replaced the uninstalled clip angles with those made of proper material, and limited the welding to that specified. *Id*. Edison also replaced the clip angles which had already been installed, except in locations where the concrete slab had been poured and the clip angles were not accessible. *Id*. In the latter locations Edison installed beam seats under each clip angle, so that if a clip angle failed, the beam seat would carry the load of the girder. *Id*. at 11 and Fig. 2.

38. Mr. Phillips testified on behalf of the Staff. He stated that when Sargent and Lundy analyzed the cracks in the clip angles, Sargent and Lundy determined that

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the design was adequate. Phillips, ff. Tr. 270 at 29. He confirmed that all clip angles which were not embedded in concrete were replaced or repaired in the field. *Id.* He also confirmed that beam seats were installed under all the girders where concrete had already been poured. *Id.* at 30. The Staff verified Edison's actions by visually inspecting about ten clip angles for cracking (no cracking was found) and by verifying the installation of the beam seats. *Id.*

39. The above testimony by Messrs. Alessi and Phillips shows that Edison has satisfactorily repaired the cracks in the structural steel surrounding the drywell. We accept that testimony as accurate and convincing. CEE offered no credible evidence to the contrary.

40. We find, based on the testimony by Messrs. Alessi and Phillips described above, that there is no credible evidence to support CEE's allegations concerning cracks in the base of the reactor building or cracks in the structural steel surrounding the drywell. Therefore, we find Contention 4(e) to be without merit.

III. CEE'S CONTENTION 8: EVACUATION OF STONY POINT

41. Contention 8 was the second of the two contentions litigated. Its language, stipulated by the parties, is as follows:

> CEE is concerned over whether there is a feasible escape route for the residents of the Stony Point Area which is adjacent to the Fermi-2 site. The only road leading to and from the area, Pointe Aux Peaux Road, lies very close to the reactor site. In case of an accident, the residents would have to travel towards the accident before they could move away from it.

The parties viewed this Contention as alleging that Pointe Aux Peaux Road is not an adequate evacuation route for the residents of Stony Point. There was no dispute as to whether Pointe Aux Peaux Road lies close to the reactor — it clearly does — or whether it is the sole evacuation route from Stony Point — it clearly is — or whether in using the Road the residents of Stony Point would be forced to move toward the reactor before moving away from the reactor — they clearly would. The sole issue was whether, given these facts, the road is a feasible evacuation route.

42. Mr. Kuron testified on behalf of CEE. He stated that if an accident were to release a radioactive plume toward Stony Point, the residents of that area could be forced to travel through the plume before they would be safe. Kuron, ff. Tr. 367 at 9. Mr. Kuron based this statement on his personal knowledge as a resident of Stony Point. *Id.*

43. Ms. Evelyn F. Madsen testified on behalf of the Applicants. Ms. Madsen was accompanied to the witness stand by Herbert Eugene Hungerford, Professor of Nuclear Engineering at Purdue University; Andrew C. Kanen, a Vice President of PRC Voorhees; and Roger A. Nelson, a professional meteorologist. Professor

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Hungerford co-sponsored Ms. Madsen's testimony on radiological dose evaluation (Tr. 406), and Mr. Kanen co-sponsored Ms. Madsen's testimony on evacuation time estimates (Tr. 405-06).

44. Ms. Madsen testified that Stony Point lies approximately one mile south of the reactor, that the population of Stony Point is approximately 1400 persons, that the total number of automobiles in Stony Point is about 783, and that about 600 automobiles would be used to evacuate Stony Point. Madsen, ff. Tr. 406 at 2-3. She derived her estimates from the 1980 Advance U.S. Census Report. *Id.* at 2. According to Ms. Madsen, traffic congestion during evacuation would depend upon the capacity of available roads and the spread in departure times of the evacuees. *Id.* at 5. Pointe Aux Peaux Road has a capacity of 1200 vehicles per hour based on a speed of 15 to 20 miles per hour. *Id.* On two of the most important roads feeding into Pointe Aux Peaux — Lakeshore Drive and Dewey Drive — the capacity was estimated to be 900 vehicles per hour. Departure times of evacuees would be affected by a variety of factors: whether workers were at work or at home at the time of notification to evacuate; the time needed for workers to return home; and the time needed at home to prepare for departure. *Id.* at 4. On the average weekday, maximum traffic was projected to occur about one hour and fifteen minutes after residents were advised to evacuate. *Id.* at 5-6, and at Table 1. This would be a result of projected departure times. *Id.* During the busiest fifteen-minute period, a total of 180 vehicles would be expected to arrive at the intersection of Dewey Drive and Pointe Aux Peaux Road. *Id.* at 6. The exit capacity along Pointe Aux Peaux Road during that fifteen-minute period would be 300 vehicles, so no congestion would occur. *Id.* On the weekend, when most workers would already be at home, there would be about 252 vehicles during the busiest fifteen-minute period, which is still below the capacity of the Road. *Id.* Ms. Madsen estimated that on an average weekday the entire population of Stony Point could reach Pointe Aux Peaux Road and travel along it to a point at or near its end within 2½ hours. *Id.* On a weekend the time would be one hour and forty-five minutes. *Id.* The travel time of an individual evacuee would be about twelve minutes. *Id.* These estimates assume "no significant traffic delays." *Id.* During adverse weather conditions, such as snow or ice, drivers would either go slower or increase the amount of space between their automobiles. *Id.* at 6-7. These changes reduce the capacity of the roads. *Id.* at 7. The capacity of Pointe Aux Peaux Road would be reduced to 800 vehicles per hour (200 per fifteen-minute period); the capacity of side streets such as Dewey Drive and Lakeshore Drive would be reduced to 600 vehicles per hour (150 per fifteen-minute period). On a weekday during adverse weather, a maximum of 128 vehicles would be expected to arrive on Lakeshore and Dewey Drives during the peak fifteen-minute period; this would be within the 150-vehicle capacity of those side streets. *Id.* On Pointe Aux Peaux Road, however, a maximum of 203 vehicles would be expected to arrive during this period, which is at the 200-vehicle capacity of that Road. *Id.* at 8. Thus, there

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might be congestion at the intersection of Pointe Aux Peaux Road and Dewey Drive (the principal side street). *Id.* However, the congestion would not exist for more than fifteen-minutes. *Id.* If the adverse weather occurred on a weekend, the level of congestion would increase because of the more rapid rate of departure. *Id.* Congestion for more than fifteen minutes would be likely at the intersection of Dewey Drive and Pointe Aux Peaux Road and on some of the side streets. *Id.* However, because of the more rapid rate of departure on a weekend, the congestion would not increase the total evacuation time for the residents. *Id.* at 8, and at Table 2. Travel time for the persons who encountered the congestion would be increased by about five to seven minutes. *Id.*

45. The Staff's testimony on Contention 8 was presented by Rick J. Anthony, an Emergency Management Specialist with the Federal Emergency Management Agency; Thomas Urbanik, II, a transportation engineer with the Texas Transportation Institute at Texas A&M University; and Falk Kantor, an Emergency Preparedness Analyst with the Commission's Office of Inspection and Enforcement.

46. Mr. Kantor testified that in the event of an accident at Fermi-2, the residents of Stony Point would be asked to take one of three possible protective actions: to take shelter; to evacuate, as a precaution, before a release of radiation occurred; or to take shelter while the plume passed over their area, and then be relocated afterward. Kantor, ff. Tr. 533 at 3-4. Mr. Kantor also stated that an evacuation time of 1 to 2½ hours is well within the range of evacuation time estimates for other nuclear facilities. *Id.* at 4.

47. Mr. Urbanik testified that all the residents of Stony Point could leave that area within a period of 1¼ to 2½ hours, and that the time actually required would depend upon the weather and the vehicular traffic caused by workers coming from the vicinity of the reactor. Urbanik, ff. Tr. 533 at 2. He assumed that 1150 vehicles would be used to evacuate Stony Point, which amounts to 1.5 vehicles per household, and accounts for visitors and for families with more than one auto. *Id.* He also assumed that workers using 1000 vehicles would be leaving the Fermi-2 plant at the time of the accident. *Id.* The relevance of the workers leaving Fermi-2 is this: the exit road from Fermi-2 ends at North Dixie Highway. Workers leaving Fermi-2 would be forced to turn into that highway and travel along it either to the north or the south. Madsen, *supra,* at Fig. 1. Pointe Aux Peaux Road also ends at North Dixie Highway, a short distance south of the point where the exit from Fermi-2 ends. *Id.* Persons leaving Stony Point would be forced to travel along Pointe Aux Peaux Road to its intersection with North Dixie Highway, turn into the Highway, and then travel along the Highway either to the north or the south. *Id.* Thus, it is possible that the vehicles of workers leaving Fermi-2 could encounter the vehicles of residents of Stony Point at the intersection of Pointe Aux Peaux Road and North Dixie Highway. *Id.* If the workers were evacuated to the north, they would travel north on North Dixie Highway, would not pass the intersection of North Dixie Highway and Pointe Aux Peaux Road, and not encounter the

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vehicles of persons leaving Stony Point. *Id.* Mr. Urbanik testified that in such a case, the 1150 vehicles from Stony Point could turn into North Dixie Highway within 1¼ hours. Urbanik, *supra,* at 3. The more difficult situation would be presented when the 1000 vehicles from Fermi-2 turn south on North Dixie Highway and meet the 1150 vehicles from Stony Point. *Id.* Without traffic control at the intersection of Pointe Aux Peaux Road and North Dixie Highway, the time required to accommodate the traffic from Stony Point would be slightly more than 2 hours. *Id.* With traffic control, the time required could be reduced to about 1½ hours. *Id.* Adverse weather, including rain or light snow, would increase these times by about 20%. *Id.* Severe weather (heavy snow) would increase the times by the amount of time necessary to clear the roads. *Id.* Mr. Urbanik concluded that persons from Stony Point could be evacuated along Pointe Aux Peaux Road without encountering any unusual or unmanageable traffic problems. *Id.*

48. We find the above testimony by the Applicants and Staff on evacuation times to be reasonable and convincing. CEE offered no testimony to contradict it. The Staff analyzed the "worst case," in which workers leaving Fermi-2 meet persons leaving Stony Point at the intersection of Pointe Aux Peaux Road and North Dixie Highway, and the Staff showed that even that situation would be acceptable. It is not likely, however, that this worst case would be as bad as the Staff assumed, because all the residents of Stony Point probably would not leave at the same time, and because workers would probably begin to leave Fermi-2 before residents would begin to leave Stony Point. Tr. 442 (Kanen). We find that the entire population of Stony Point could be evacuated along Pointe Aux Peaux Road within 1½ to 2½ hours, and that this amount of time is acceptable.

49. The possibility of flooding was also discussed at the hearing. During the "100 year flood" Stony Point would be flooded. Tr. 481 (Madsen). However, Pointe Aux Peaux Road, which is the subject of Contention 8, would not be flooded. Tr. 476, 499 (Madsen).

50. There was also evidence describing the procedures for ordering an evacuation and the time required to carry out those procedures. Ms. Madsen described a siren system which Edison plans to install, and which would notify the residents of Stony Point of an emergency at Fermi-2. *Id.* at 9. There was also testimony on the questions of whether handicapped persons would be furnished transportation, Tr. 409-411 (Madsen), whether hearing-impaired persons could be notified, Tr. 415 (Madsen), whether Edison would have authority to turn on the siren, Tr. 443 (Madsen), and how long it might take the Governor of Michigan to turn on the siren after Edison recommended evacuation, Tr. 445 (Madsen). All of these matters fall under the general question of whether the evacuation plan for Stony Point is adequate. They do not fall under Contention 8, which is limited to the feasibility of Pointe Aux Peaux Road as an evacuation route. Since our jurisdiction is limited to ruling on matters within the scope of admitted contentions, we make no finding on any of these other matters. CEE also raised, in its cross-examination, the question

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whether Pointe Aux Peaux Road could be cleared in the case of an accident. Tr. 420 (Howell). Mr. Kanen responded that there are provisions in the Monroe County Emergency Plan under which wreckers would be sent immediately. Tr. 422. This point also appears to be beyond the scope of Contention 8; it refers principally to the adequacy of the Emergency Plan. There was no evidence that anything about Pointe Aux Peaux Road makes it unusually susceptible to accidents or makes clearing accidents on that Road unusually difficult. We find nothing in the evidence discussed in this paragraph to show that Pointe Aux Peaux Road is not a feasible evacuation route from Stony Point.

51. We are left with the fact that evacuees using Pointe Aux Peaux Road must travel toward the reactor before traveling away from it. Does this fact make Pointe Aux Peaux Road infeasible as an evacuation route? The evidence on this point was supplied by Ms. Madsen and Mr. Kantor.

52. Ms. Madsen postulated an accident which released a substantial amount of radioactivity to the atmosphere over a period of eight hours during which the wind blew steadily toward Stony Point at a low rate of speed (1 meter/second, or 2.24 miles per hour). Madsen, ff. Tr. 406 at 11-12. She selected nine locations in and around Stony Point, and then estimated doses at those locations. *Id.* at 13. She also estimated doses along various possible evacuation routes. *Id.* An evacuee using some of the routes would cross the hypothetical plume from one side to the other; on other routes the evacuee would travel along the centerline of the plume. *Id.* She also included non-existent evacuation routes (which would have to be constructed). *Id.* The doses were first calculated for each of the various locations on the assumption that no evacuation occurred. *Id.* at 14, and at Table 3. Then, doses were calculated for each of the different evacuation routes. *Id.* at 14, and Table 4. The total doses received by the evacuees were found by adding the dose received before evacuation to the dose received during evacuation. *Id.* Based upon the above, Ms. Madsen concluded that evacuation would reduce the total dose to all evacuees, and thus would be preferred to nonevacuation. *Id.* at 15. She also concluded that the nonexistent routes, which would have to be constructed, would not result in lower doses than would the evacuation routes using Pointe Aux Peaux Road. *Id.* at 16.

53. Mr. Kantor compared the time traveling toward the reactor to the total time required for evacuation. Pointe Aux Peaux Road, the sole evacuation route, is located between Stony Point and the reactor. The distance from most (80%) of the residences in Stony Point to the road is not great (about ¾ mile), *id.* at Fig. 4; that distance is considerably shorter than the road itself (which is 2.5 miles long), Kantor, ff. Tr. 533 at 2; and that distance is small when compared to the total distance persons would be expected to travel in an evacuation (which would include at least a substantial distance on North Dixie Highway). Mr. Urbanik testified that only six to ten minutes would be spent driving toward the reactor. Tr. 563. Mr. Kantor concluded that, regardless of the amount of dose one assumed

would be received by residents during an evacuation, the incremental increase due to those six to ten minutes would be insignificant. Tr. 569-570. Mr. Kantor's attention also was drawn to the fact that Pointe Aux Peaux Road itself extends a small distance toward the reactor (about ¼ mile) during its 2.5-mile course, and Mr. Kantor was asked whether the increase in dose due to traveling this distance would be significant. He responded that it would not. Tr. 559. He also said that the necessity of driving toward the reactor for a short distance before driving away from it was not unique in the 10-mile emergency zone. Tr. 548. Mr. Kantor's opinion on these points is corroborated by Ms. Madsen's estimate of dose as a function of evacuation routes and departure times. Madsen, ff. Tr. 406 at Table 4. We accept Mr. Kantor's conclusion as accurate and convincing; we find that the need to drive toward the reactor does not make Pointe Aux Peaux Road infeasible as an evacuation route.

54. Despite the above finding, however, it remains true that travel toward the reactor might increase an evacuee's dose. For some residents of Stony Point, evacuation would begin at a point 2 miles from the reactor. These persons would be within 1¼ miles when they reached Pointe Aux Peaux Road. *Id.* at Fig. 6. Other residents also would be forced to travel toward the road, but not as far. As stated above, 80% of the residences are within ¾ mile of the road. Mr. Kantor testified that the consequences of moving toward the reactor are most severe in the nearest vicinity of the reactor. Tr. 552. If the wind were toward Stony Point, but at a speed much lower than that postulated by Ms. Madsen, the exposure dose rate could rise rapidly as one approached the reactor. Tr. 483-484 (Nelson); Tr. 485 (Hungerford). This would be true, for example, where the wind speed was nearly zero, a radioactive air mass formed over the reactor building with a bell-shaped (Gaussian) distribution of radioactivity within it, and the mass spread slowly across Pointe Aux Peaux Road toward Stony Point. *See, e.g.*, Tr. 482-484 (Nelson); 489-490 (Hungerford). An evacuee driving into the air mass from a point on the edge of the bell-shaped curve where the concentration was low, to a point within the curve where the concentration was high, could conceivably increase his dose rate by a substantial factor. For example, an evacuee at a distance of two standard deviations from the center of the curve would be exposed to a dose rate of approximately 14% of the maximum intensity at the center. If he then traveled to a point half way toward the center (one standard deviation away) he would be exposed at a dose rate of approximately 60% of maximum intensity. He would receive additional exposure after turning at that point and traveling out of the curve. Altogether, such a trip could increase his dose rate by a factor of 5 to 10. In such circumstances, evacuation along Pointe Aux Peaux Road might not be the appropriate protective action (*see* 10 CFR §50.47) for residents of Stony Point. The question of alternative routes then arises. For the residents to be able to drive directly away from the reactor, it would be necessary to construct a new road

leading west from Stony Point along the border of Lake Erie. Madsen, *supra*, at Fig. 7.

55. We have considered the possibility of radioactivity moving more slowly toward Stony Point, because we believe that such a phenomenon is imaginable. The fact that some evacuees from Stony Point must reduce their distance from the reactor by almost one-half, and must travel along the edge of the site boundary, possibly increasing their radiation dose unnecessarily, justifies our considering such an event. However, we must also consider the *probability* that such an event would happen. First, the goal of the emergency plan is to evacuate all persons within Stony Point before radiation is released. Kantor, ff. Tr. 533, at 4. Thus, it is likely that most of the residents would have left Stony Point before a release occurred. Second, if a release did occur before or during evacuation, the probability of its moving toward Stony Point is small, because the wind blows from the reactor toward Stony Point less than 5% of the time. Madsen, *supra*, at 13. Average wind speeds in Stony Point are 8 to 10 miles per hour, *id.*, so the probability of a stationary or slow-moving plume over Pointe Aux Peaux Road is very small indeed. To these probabilities we must add the fact that the time spent driving toward the reactor is six to ten minutes from the farthest point in Stony Point. For most residences it is less. For an evacuee's dose rate to increase by the factor of five to ten mentioned above, this driving period would have to begin just as the outer edge of the bell-shaped mass reached the evacuee's point of departure. Finally, one must consider what it means to say that an evacuee's dose rate could be increased by a factor of five to ten. It does not mean that an evacuee's total dose during evacuation would be increased by a factor of five to ten; the total dose increase very probably would be less. The doses estimated by Ms. Madsen, who postulated a serious accident, reached a maximum of 1.94 rems for the most highly exposed evacuation route. Madsen, *supra*, at Table 4. For the emergency plan to be unacceptable, one would have to postulate an accident even more severe — and more unlikely — than Ms. Madsen did.

56. We believe that the slow-moving air mass spreading toward Stony Point is the only imaginable situation in which our conclusion in ¶53 might be subject to doubt. We find that the probability is remote, however, that such a situation could cause a significant increase in the dose to evacuees. This conclusion is based upon the direction of prevailing winds and their average speeds, the shortness of the time spent driving toward the reactor, the small likelihood that an evacuee's time of departure will coincide with the arrival of the edge of the mass at his point of departure, and the small likelihood of an accident severe enough to make significant the increase in dose which might occur. For these reasons, we find that the use of Pointe Aux Peaux Road as an evacuation route creates only a negligible increase in the total risk to residents of Stony Point. The increase does not justify building a road leading away from Stony Point toward the west.

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57. For the reasons just stated, we find that the testimony by the Applicants and the Staff establishes that vehicles departing Stony Point during an evacuation can be accommodated by Pointe Aux Peaux Road, and that the fact that it will be necessary for the vehicles using that Road to move toward the reactor for a short distance does not impair the feasibility of that road as an evacuation route. Thus, Contention 8 must fail.

IV. MONROE COUNTY'S PETITION TO INTERVENE

58. By a motion dated August 27, 1982, the County of Monroe, Michigan has petitioned to intervene in this proceeding. In its petition, the County requests that we admit a number of additional contentions as issues in controversy, and that we reopen the record to take additional evidence on those contentions. The contentions are all concerned with emergency planning. The Applicants and the NRC Staff oppose the petition on the ground that the petition is not timely and would delay the proceeding. CEE supports the petition.

59. The period for timely intervention began on September 11, 1978, when the Commission published a notice of opportunity for hearing. 43 *Fed. Reg.* 40327. The period ended thirty days later on October 10, 1978. *Id.* CEE filed a timely petition to intervene at that time, and was later admitted as a party. Thus, the County's petition comes almost four years late. As stated in ¶2 above, the hearing began on March 31, 1982 and ended on April 2, 1982. The evidentiary record now has been closed and proposed findings have been filed. At the time the County's petition reached us, we had reviewed the record, considered the proposed findings, and were preparing our initial decision.

60. The Commission has set down specific criteria for judging late petitions to intervene. 10 CFR §2.714(a) provides as follows:

> Nontimely filings will not be entertained absent a determination by the Commission, the presiding officer or the atomic safety and licensing board designated to rule on the petition and/or request, that the petition and/or request should be granted based upon a balancing of the following factors. . . :
>
> (i) Good cause, if any, for failure to file on time.
> (ii) The availability of other means whereby the petitioner's interest will be protected.
> (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
> (iv) The extent to which the petitioner's interest will be represented by existing parties.
> (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

We shall discuss each of these factors in order.

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Good cause for failure to file on time

61. The County's petition states expressly the County's reasons for filing late. The reasons are: a) that the County has been trying to devise a radiological emergency plan; b) that the County has tried to work closely with the Federal Emergency Management Agency (FEMA) to formulate such a plan; c) County residents have provided information to FEMA by testifying at formal public hearings in 1982; d) as a result of these activities, the County Commissioners "have only recently become aware that significant defects in emergency planning, as stated more fully in the County Commissioners' Contentions . . . are not remediable by the County Commissioners themselves and urgently need addressing before any decision is made on an operating license for Fermi-2. . . ." The Commissioners' contentions assert that there are not enough buses, that volunteer firefighters will not be adequate, that the County cannot provide recovery and reentry services for evacuees, that roads from beach areas are inadequate, that the County's personnel are inadequately trained, that there is inadequate staff for decontamination and reception centers, that there is no means to test vehicles for contamination, that distribution of potassium iodide is not likely to be adequate, that radiological monitoring is inadequate, that the local personnel who would be required to do evacuation work might evacuate their families instead of doing that work, that the available methods of decontaminating vehicles would be inadequate, and that responsible local officials could not be mobilized in time to carry out the emergency plan. The legal issue for us to decide is whether, given this statement of the County's reasons, they amount to "good cause" under 10 CFR §2.714. In effect, the County's statement is that, as a result of the County's work with FEMA, the County has only recently become aware of inadequacies in the County's emergency plan. Because we are concerned with the County's excuse for delay rather than the importance of its contentions, the crucial part of the County's statement is that it has "only recently become aware" of the inadequacies. If the County were or should have been aware earlier, then the County's stated reason cannot be accepted.

62. In their answer to the County's petition, the Applicants contend that the County was in a position to file an intervention petition as early as January, 1980. The Applicants attached to their answer documents showing the County's experience in emergency planning. The first attachment is a letter to the Nuclear Regulatory Commission from Mr. Arden T. Westover, Chairman of the Monroe County Board of Commissioners. The letter is dated January 25, 1980. It states that "Monroe County is already deeply involved in the planning process to cope with a nuclear accident." It urges the Commission to adopt the proposed rules on emergency planning which the Commission was then considering. The Applicants also attached a second letter. It was written to the Commission by Mr. Jon R. Eckert, Director of the Office of Civil Preparedness of Monroe County. It was

dated January 21, 1980, and stated that Monroe County would file a detailed letter commenting on the Commission's proposed rule. It also stated that Mr. Eckert planned to participate in a workshop on the proposed rule in Chicago on January 22, 1980. During 1980, Monroe County formed the Enrico Fermi-2 Emergency Planning Committee, which consisted of about sixty officials from various governmental agencies. This latter development was described by Mr. Eckert during a public meeting, a portion of the transcript of which the Applicants attached to their answer.

63. During 1981, the County worked on its emergency plan. The completed version of the plan was submitted for review and comment to the FEMA Regional Assistance Committee on November 19, 1981. *Interim Findings for Enrico Fermi Nuclear Power Plant, Unit 2 Off-Site Radiological Emergency Preparedness, Federal Emergency Management Agency*, at p. 2. The Applicants state that a working draft of this plan was circulated for public comment earlier, in April of 1981, before being submitted to FEMA, and that the draft was extensively reviewed by local officials.

64. On February 2, 1982, a full-scale exercise was held to test both the emergency plan and the ability of local officials to respond to an emergency at Fermi-2. *Final Report, February 22, 1982, on the Enrico Fermi Atomic Power Plant, Unit §2 Full Scale Joint Emergency Exercise February 1-2, 1982, Federal Emergency Management Agency*, at p. 1. Monroe County participated actively in the exercise. *Id.* at 1-13. On the evening of February 3, the State of Michigan conducted a public hearing on the exercise. Monroe County participated in that hearing. This was the public meeting attended by Mr. Eckert, mentioned above, a portion of the transcript of which the Applicants attached to their answer. FEMA's written critique of the exercise was published on February 22, 1982 (*see Final Report, id.*). The findings and suggestions FEMA made in the *Report* have been available to the County since that date.

65. Mr. Frank Kuron, CEE's witness at the hearing, has been a Monroe County Commissioner since January of 1981. Tr. 501 (Kuron). Mr. Kuron also serves on the Monroe County Civil Preparedness Board. *Id.* Mr. Kuron was a member of CEE when it intervened in 1978, Tr. 15 (Kuron), and Mr. Kuron began participating in this proceeding on December 18, 1978, when he made a statement at the first prehearing conference. Tr. 6-15. The Applicants contend that Mr. Kuron's knowledge of the hearing process should be imputed to the County beginning in January, 1981, when Mr. Kuron became a Commissioner.

66. The NRC Staff also opposes the County's petition. First, the Staff points out that the first person to make a limited appearance at the start of the evidentiary hearing was Mr. Eckert (Tr. 221) who commented upon Edison's proposed siren system, upon Edison's traffic surveys, and said that Edison should provide funds to the County for emergency preparedness. Second, the Staff points out that the testimony at the hearing covered several subjects having to do with emergency

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response and evacuation plans. The inference here is that the County was fully aware of emergency planning issues at the time of the hearing, and could have intervened then.

67. We find that, in light of the facts set out above, there is not "good cause" for the County's delay. The County was aware of emergency planning issues early in 1980; the County began to work actively on emergency planning during 1980; the County submitted a detailed emergency plan to FEMA in November of 1981; that plan had been reviewed earlier in 1981 by local officials; the County participated in the full-scale exercise on February 2, 1982, participated in its critique, and had the benefit of FEMA's findings and suggestions during that same month; the County's principal staff official on emergency planning made arguments at the evidentiary hearing and Mr. Kuron, who has participated in this proceeding since its inception, has been a Commissioner since January of 1981. It is possible to believe that in 1980, the County was not yet fully aware of the issues posed by emergency planning. By November of 1981, however, the County must have been aware of those issues, because the County had already gone through the process of preparing an emergency plan for Fermi-2. By February of 1982, when the full-scale exercise was carried out, the County was aware not only of what its emergency plan contained, but was aware of how the plan fared in the exercise. The County must have been aware, at this point at the very latest, of the issues posed by emergency planning and response for Fermi-2. February 2-3, the days of the exercise and its critique, were still *eight weeks before* the beginning of the evidentiary hearing. It is impossible to believe that the County did not possess sufficient knowledge to intervene at that time.

68. The evidentiary hearing was held from March 31, 1982 to April 2, 1982. It produced considerable testimony by the Applicants and the Staff on emergency response and emergency planning. The County participated in that hearing and was aware of the testimony when it was given. Yet, the County still did not petition to intervene. The County waited almost *five more months* before asserting any interest. It is obvious that the County was aware of emergency planning issues during the hearing, but simply took no action.

69. The discussion above has reviewed the available evidence of when the County was aware of issues on emergency planning and response. It should be pointed out, however, that the burden is *not* on the Applicants and Staff to show that the County was or should have been aware of those issues at a certain time. The burden of showing good cause is on the late petitioner. The County's statement that the County "has only recently become aware" is *not* a showing of why it did not or could not have become aware earlier. The County's statement is simply a statement; no details are provided to back it up. In light of this failure by the County to make any detailed showing, and in light of the clear evidence that the County was aware of the asserted issues eight weeks before the hearing, and was also aware of

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those issues at the time of the hearing, our ruling must be that the County has not shown good cause for its delay.

Other means of protecting the petitioner's interest

70. This second factor in 10 CFR §2.714(a) points away from allowing late intervention if the interest which the petitioner asserts can be protected by some means other than litigation. The County asserts that no other means can guarantee an adequate offsite emergency plan for Fermi-2. The County's showing on this factor, however, is limited simply to making that assertion. The County has not provided any argument or information to show why other means would not be adequate.

71. The Applicants and the NRC Staff both argue that means other than litigation are available. Under the Commission's regulations, the NRC Staff is required to make a finding that offsite emergency preparedness is adequate before granting an operating license. 10 CFR §50.47. NRC is required to base its finding on FEMA's evaluation of whether local emergency plans are adequate and can be implemented. *Id.* The Applicants and the NRC Staff argue that the County's concern about bus shortages, volunteer firefighters, and so forth are precisely the things which FEMA is required to evaluate in reviewing the County's plan. Thus, the Applicants and the Staff conclude that FEMA provides an available alternative forum for the County, and an adequate means for protecting the County's interest.

72. The Applicants and the Staff are clearly right about the responsibility of FEMA. Under 10 CFR §50.47, an affirmative finding must be made on the adequacy of emergency preparedness, and that finding must be made regardless of the issues litigated in a licensing proceeding. However, an intervenor may demand and receive a hearing on matters which FEMA will review, if the intervenor tenders admissible contentions which are timely filed. If review by the NRC Staff (and FEMA) were always an adequate alternative to litigation, no petitioner could ever satisfy the second factor of 10 CFR §2.714(a).

73. We do not believe it is necessary for us to decide whether, or to what extent, review by FEMA or the NRC Staff may be adequate to protect the County's interest in order to weigh the second factor here. The burden is on the County to show why this factor points in the direction of granting the County's late petition. The County has made no such showing and has not carried its burden. That alone is reason enough not to weigh this factor in the County's favor.

The County's assistance in developing a sound record

74. The County asserts in its petition that it will assist in developing a sound record. However, the assertion alone is the extent of the County's effort to address

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this factor. The County offers no factual support for the assertion. Absent such factual support, which the County has the burden to supply, there is no basis for concluding that the County's assertion is true. For that reason, we cannot find that this factor should be weighed in the County's favor.

Whether existing parties will represent the County's interest

75. The County's petition states that "no existing party has the legal or actual capacity" to protect the County's interest. It is no doubt true that only the County has the legal capacity to represent the County. Moreover, if the County's interest is expressed by the additional contentions it seeks to litigate, it also seems true that no other party stands ready to litigate them. This factor appears to weigh in the County's favor.

Whether the County's participation will broaden the issues or delay the proceeding

76. This is the final factor to be considered. At this point in the proceeding, the issues consist of specific allegations concerning construction (Contention 4), and of the question whether Pointe Aux Peaux Road is a feasible evacuation route (Contention 8). The County's contentions challenge the adequacy of the emergency plan. That plan has *not* been an issue thus far, so the County's contentions, if admitted, would broaden the issues considerably. Would the County's participation delay the proceeding? If the County were admitted now, it would be necessary for us to begin what would amount to a new case. The County's contentions would have to be screened for admissibility at a new prehearing conference, a new round of discovery would begin, another prehearing conference would occur before another evidentiary hearing, and the parties would file a new set of proposed findings. Only then would we be able to reach a decision. It is obvious that the proceeding would be delayed if the County were admitted now.

77. The County states that the delay "will not prejudice any party" because the Applicants do not propose to begin full power operation of Fermi-2 until November, 1983. However, this statement ignores the words of the regulation, which refer to delay of the *proceeding*, not to delay of operation of the facility. The Applicants and NRC Staff are entitled to assume, after the hearing has reached the stage this one has, that both the issues to be litigated and the parties to the hearing have been established with finality. This is simply a matter of fairness to them as parties. Thus, it is irrelevant, in our opinion, whether granting the County's petition would delay operation of the facility. Moreover, it is by no means clear that the County's participation would not have that effect. The Staff points out that the date of fuel loading, rather than operation, is the crucial one, because the

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Applicants must have a license in order to load fuel. The projected fuel loading date is June, 1983. The time necessary to hear and decide the County's contentions could easily extend past that date. We find that granting the County's petition would broaden the issues and delay the proceeding. Thus, the last factor weighs against granting the County's petition.

Our conclusion on the County's petition

78. Of the five factors considered above, only the fourth weighs in the County's favor. The first and fifth weigh against the County. When considering these factors together, we find that the lack of good cause (factor one) and the delay in the proceeding (factor five) outweigh by a considerable margin the fact that no other party will represent the County's asserted interest (factor four). For this reason, we deny the County's petition.

V. CEE'S MOTION TO REOPEN THE RECORD

79. In its answer in support of the County's petition, CEE also requests that the record be reopened to litigate CEE's "Amended Contentions 8 and 9." These "Amended Contentions" were contained in CEE's Amended Petition to Intervene, filed on December 4, 1978. In that Petition, paragraph (Amended Contention) 8 referred broadly to emergency planning; paragraph (Amended Contention) 9 referred to medical treatment of radiation injuries. In a Prehearing Conference Order on January 2, 1979, this Board ruled that paragraph 8 was acceptable only insofar as it referred to the evacuation route from Stony Point. The balance of paragraph 8, which referred to evacuating the City of Detroit, was excluded. The Board also excluded paragraph 9, subject to CEE's right to amend or supplement that paragraph afterward.

80. On March 5, 1979 the parties submitted a list of stipulated contentions upon which they had agreed. Contention 8 of that list omitted the language previously excluded by the Board and was in the form litigated at the hearing. Contention 8 was also discussed at a second prehearing conference on July 22, 1981. At that conference the Applicants asserted that the general adequacy of the emergency plan was not an issue in controversy; they asserted that "the sole matter in controversy is the evacuation route from Stony Point." Tr. 207 (Voigt). In response, CEE said:

> Speaking on behalf of the Intervenor, the contention that was submitted is very specific. We are not going to attempt to expand the contention in this proceeding. We have major reservations about the Applicants' emergency evacuation plans. We can deal with that in other forums. We are not going to try to expand our contentions.

Tr. 208 (Siegfried). Paragraph 9 was also discussed at that same prehearing conference. The parties' stipulation had provided that CEE would have a further opportunity to amend paragraph 9. At the Conference, however, CEE voluntarily abandoned paragraph 9. The discussion was as follows:

> MR. SIEGFRIED: [Contention] Nine is actually the hospital contention, and that there is clearly no problem with. And No. 10 is the generic safety problems for BWRs.
>
> Now, our position is we want to withdraw 10 also.
>
> CHAIRMAN MILHOLLIN: Very well. So you are withdrawing 9 and 10 in their entirety.
>
> MR. SIEGFRIED: Yes, again on the basis, not that we do not have these concerns, but if we are not going to be able to provide expert witnesses and we are not going to be able to proceed, I do not see any sense in keeping them on the table.

Tr. 195.

81. From the above, it is clear that, *before the hearing*, CEE voluntarily relinquished its right to litigate paragraphs 8 and 9. Elementary fairness requires that CEE be estopped from raising those matters now.

82. Because CEE also requests that the evidentiary record be reopened, CEE must show that there is new and significant information which, if available to the Board and parties, would materially affect the decision. *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 362-63 (1981); *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978). CEE has provided no such information, so its petition fails this requirement also.

83. For the reasons stated above, we deny CEE's petition to reopen the record.

VI. CONCLUSIONS OF LAW

84. We have considered all the evidence submitted by the parties and the entire record of this proceeding. That record consists of the Commission's Notice of Hearing, the pleadings filed by the parties, the transcripts of the hearing, and the exhibits received into evidence. All issues, arguments, or proposed findings presented by the parties, but not addressed in this decision, have been found to be without merit or unnecessary to our decision. Our findings of fact on Contentions 4 and 8 are presented above in our discussion of those Contentions. Those findings are supported by reliable, probative and substantial evidence in the record. Our discussion above describes that evidence in detail, describes our analysis of it, and describes our application of it to the two contentions which were litigated. Our jurisdiction is limited to deciding those contentions which are admitted as issues in controversy. 10 CFR §2.760a.

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85. With respect to Contention 4, we find that none of the allegations it contains is supported by the evidence of record. We further find that every matter raised by that contention has been identified and investigated by the Commission's Office of Inspection and Enforcement and that every matter has been satisfactorily resolved.

86. With respect to Contention 8, we find that the evidence of record shows that Pointe Aux Peaux Road is feasible for evacuating persons from Stony Point, and that this is so despite the fact that the road lies near the reactor and despite the fact that persons using the road would be forced to travel toward the reactor for a short distance.

87. With respect to the matters alleged by Contentions 4 and 8, we find that there is reasonable assurance that this facility can be operated without endangering the health and safety of the public, and that the facility has been constructed and will be operated in accordance with the Commission's regulations.

VII. ORDER

WHEREFORE, IT IS ORDERED that the Director of Nuclear Reactor Regulation is hereby authorized to issue, in accordance with 10 CFR §50.57, an operating license to Applicants for the Enrico Fermi Atomic Power Plant, Unit 2.

IT IS FURTHER ORDERED that this Initial Decision shall constitute the final action of the Commission forty-five (45) days after the date of issuance hereof, subject to any review under 10 CFR Part 2. Exceptions to this Initial Decision may be filed by any party within ten (10) days after its service. A brief in support of the exceptions shall be filed within thirty (30) days thereafter, and forty (40) days thereafter in the case of the Staff. Within thirty (30) days of the filing and service of

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the brief of the appellant, forty (40) days in case of the Staff, any other party may file a brief in support of, or in opposition to, the exceptions.

THE ATOMIC SAFETY AND
LICENSING BOARD

Dr. Peter A. Morris
ADMINISTRATIVE JUDGE

Dr. David R. Schink
ADMINISTRATIVE JUDGE

Gary L. Milhollin, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 29th day of October, 1982.

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Cite as 16 NRC 1439 (1982) LBP-82-97

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon

In the Matter of

Docket No. 50-155
(Spent Fuel Pool Amendment)

CONSUMERS POWER COMPANY
(Big Rock Point Plant)

October 29, 1982

The Licensing Board rules that applicant must amend its application to comply with Commission guidance that the neutron multiplication factor (k_{eff}) in the proposed expansion of its spent fuel pool must not under any conditions, including extremely low densities of water, exceed 0.95. In this plant, the spent fuel pool is within the containment, and the Board required a showing that k_{eff} would not exceed 0.95 even after substantial boil-off occurred, as it might during a TMI-2 type incident accompanied by a loss of cooling in the fuel pool. The Board also requires analysis of a very low water density environment, characterized as a "mist," in which there appears to be a possibility that supercriticality might be achieved. Applicant's argument that the mist environment should be governed by regulations permitting a k_{eff} of 0.98 for dry fuel is rejected by the Board.

FUEL POOLS

Expansion of racks in a plant in which the spent fuel pool is within the containment must meet the requirement that k_{eff} not exceed 0.95 even under conditions of pool boiling or of very low density water.

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TECHNICAL ISSUES DISCUSSED

$k_{effective}$ (spent fuel pool)
Neutron multiplication factor (spent fuel pool)
Spent fuel pool (k_{eff})
Temperature (effect on k_{eff} in spent fuel pool)
Void formation (effect on k_{eff} in spent fuel pool)
Water density (effect on k_{eff} in spent fuel pool)

INITIAL DECISION
(Concerning Neutron Multiplication Factor)

This initial decision considers whether the proposed alteration of Consumer Power Company's (applicant's) spent fuel pool, which is located within the containment of the Big Rock Point Plant, complies with regulatory requirements and guidelines requiring that the neutron multiplication factor (criticality constant or k_{eff}) of the spent fuel pool never rise above 0.95.

This decision is one of a series being issued to expedite this case. Because we conclude that applicant must take specific steps to bring its pool into compliance with the Commission's guidance on k_{eff}, it is particularly important that we issue this decision immediately, thus minimizing possibly disruptive effects on applicant's operations by providing it an opportunity to make the required changes promptly.

We commence this decision by citing applicant's proposed initial decision. Applicant's treatment of the evidence was by far the most thorough of the parties. For the most part, we agree with both its factual and legal conclusions and we find its proposed decision to be both a well-written exposition of its viewpoint and an effective vehicle from which we can indicate where our reasoning departs. Although adopting applicant's proposed findings in part, we have freely edited them and have altered or deleted sections analyzing the testimony of Mr. Edward Lantz and Dr. Daniel A. Prelewicz (concerning the amount of boil-off necessary to induce void formation).

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I. CONSUMERS POWER COMPANY'S PROPOSED INITIAL DECISION

A. Background

O'Neill Contention IIE-3 states:

> The application has not adequately analyzed the possibility of criticality occurring in the fuel pool because of the increased density of storage without a gross distortion of the racks.

Consumers Power Company and the Staff of the Nuclear Regulatory Commission (staff) filed motions for summary disposition of this contention on October 5, 1981. Applicant's motion was supported by the affidavit of Dr. Yong S. Kim, a nuclear engineer employed by NUS Corporation. Dr. Kim previously authored the criticality analysis set forth in the application in this proceeding. Staff's motion was supported by the affidavit of Mr. Edward Lantz. Intervenors Christa-Maria, Jim Mills and Joanne Bier and Intervenor John O'Neill submitted arguments in opposition.

On February 5, 1982, we entered a Memorandum and Order (LBP-82-7, 15 NRC 290) denying summary disposition on this contention on the ground that Christa-Maria had demonstrated a genuine issue of material fact. We noted that Dr. Kim had used a pool water temperature of 212°F in his analysis and had calculated a k_{eff} of 0.95, the maximum allowable reactivity for spent fuel under wet storage conditions according to existing Commission guidance. We accepted Christa-Maria's argument that because of the hydrostatic load the boiling temperature at the bottom of the spent fuel pool is 247°F, and that Dr. Kim's calculation therefore might not have been conservative. We also questioned the thoroughness of the staff's review of the Licensee's criticality analysis. Furthermore, we noted that Dr. Kim did not appear to have considered the effect on k_{eff} of possible distortion of the fuel racks from the drop of a fuel assembly or during heating (Order at 292-93).

On February 1, 1982, John O'Neill submitted an affidavit by Charles W. Huver, Ph.D., concerning another contention in this proceeding. This affidavit cited a journal article — Cano, J. M., Caro, R., and Martinez-Val, J. M., "Supercriticality Through Optimum Moderation in Nuclear Fuel Storage," 48 *Nuclear Technology* at 251-260 (1980) (supercriticality article) — which we subsequently analyzed. In our February 19, 1982, Memorandum and Order Concerning Motions for Summary Disposition (LBP-82-8, 15 NRC 299) we expressed our conclusion that this article raised a genuine issue of fact concerning whether the Big Rock spent fuel pool might reach supercriticality if it were to begin boiling (Order at 332-33).

On May 10, 1982, Licensee filed the testimony of four witnesses on O'Neill Contention IIE-3:

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(a) Daniel A. Prelewicz. The testimony of Dr. Prelewicz, an engineer with thermal hydraulics expertise, provides the thermal conditions for use in the criticality analysis. Dr. Prelewicz describes how the natural circulation cooling process in the Big Rock Point spent fuel pool thermal conditions is determined, assuming that all pool cooling systems are lost and the pool surface begins to boil. ("Testimony of Daniel A. Prelewicz Concerning Thermal Hydraulic Conditions for Criticality Analysis," hereinafter "Prelewicz Testimony," following Tr. 1420.)

(b) Rodney Gay. Attached to Dr. Prelewicz's testimony is a study entitled "Spent Fuel Pool Thermal-Hydraulic Analysis For Big Rock Point Plant," co-authored by Dr. Prelewicz and Dr. Rodney Gay, who is also a thermal hydraulics expert. This study uses the GFLOW computer code, developed by Dr. Gay, to model the natural convection currents in the Big Rock pool in three dimensions. The study confirms Dr. Prelewicz's assumption about the inlet temperature of water currents at the bottom of the fuel rods. ("Spent Fuel Pool Thermal-Hydraulic Analysis For Big Rock Point Plant," Attachment A to the Prelewicz Testimony.)

(c) Raymond F. Sacramo. The testimony of Mr. Sacramo, a mechanical engineer employed by NUS Corp., analyzes the nature of the distortion of the racks that could occur as a result of a fuel assembly drop or heating of the pool. ("Testimony of Raymond F. Sacramo Concerning Possible Distortion of the Spent Fuel Pool Racks (O'Neill Contention IIE-3)," hereinafter "Sacramo Testimony," following Tr. 1421.)

(d) Yong S. Kim. The testimony of Dr. Kim addresses the questions raised by the Board in its orders of February 5 and February 19: the effect of possible pool water temperatures higher than 212°F on k_{eff}, the effect of possible rack distortions on k_{eff}, and the potential of supercriticality through optimum moderation in nuclear fuel storage. ("Testimony of Yong S. Kim Concerning Criticality Analysis (O'Neill Contention IIE-3)," hereinafter "Kim Testimony," following Tr. 1419.)

Also on May 10, 1982, the Staff submitted the testimony of Mr. Edward Lantz, a Senior Reactor Engineer in its Reactor Systems Branch. Mr. Lantz also addressed the Board's concerns regarding the effects of pool temperature or rack distortion on k_{eff} and the possibility of supercriticality through optimum moderation. ("Testimony of Edward Lantz Concerning O'Neill Contention No. II.E.3," hereinafter "Lantz Testimony," following Tr. 1905.)

On May 13, 1982, the Board issued another memorandum regarding the criticality contention. After a preliminary review of Licensee's testimony, the Board requested comments on whether natural convection currents could be substantially altered by either (a) the geometry of the pool, the racks or the fuel elements, or (b) by debris that could fall into the pool under a credible scenario. If so, the board queried the possible effects on k_{eff}. Memorandum (Clarification Concerning O'Neill Contention IIE-3, May 13, 1982, at 1). On June 1, 1982,

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Licensee filed the testimony of David P. Blanchard, a Technical Engineer at Big Rock Point.

Mr. Blanchard's testimony addresses the questions raised by the Board. ("Testimony of David P. Blanchard in Response to Board Questions Relating to Natural Water Convection Currents," hereinafter "Blanchard Testimony," following Tr. 1431.)

O'Neill Contention IIE-3 was fully litigated at the evidentiary hearings held on June 9-12, in Boyne Falls, Michigan (Tr. 1391-1468, 1503-1692, 1748-2002, 2006-2009, 2092-2094 and 2383-2384). Cross-examination of all witnesses testifying on this contention, both by the Intervenors and by the Board, was lengthy and vigorous. Intervenors did not file testimony or rebuttal testimony on the contention. Nonetheless, at the close of hearings, Intervenors requested the right to call rebuttal witnesses (Tr. 2367-69), a request amplified in a written motion of July 1, 1982. On July 21, 1982, we ruled that hearings on the criticality issues had been completed and that Intervenors' allegations that the record contained ambiguous or conflicting testimony were insufficient to depart from the pre-established schedule. Noting the importance of the issue, however, we allowed Intervenors until August 9, 1982, to identify a witness and to explain why the record should be kept open. We stated that failing a timely filing, the hearing on the criticality issue would be considered complete (Memorandum (Motion Regarding Rebuttal Witnesses on Criticality Contention), July 21, 1982 at 1). Intervenors filed no motion.

B. Applicable Law

The NRC, by regulation (10 CFR §54.57 (a)(3)(i)) requires reasonable assurance that all license activities will be conducted without endangering the health and safety of the public. In furtherance of this objective and within the framework of the issue presently being considered by the Board, General Design Criterion 62 (10 CFR Part 50, Appendix A) requires that "criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations." Implementing guidelines developed by the NRC Staff establish a maximum k_{eff} of 0.95 for spent nuclear fuel under wet storage conditions. *See* Standard Review Plan, NUREG-0800, dated July 1981, §9.1.2; NRC Branch Technical Position entitled "OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications," and NRC Regulatory Guide 1.13, Rev. 1 dated December 1975. (Revision 2 to Regulatory Guide 1.13 was proposed for comment in December 1981. That document has not yet been adopted by the NRC Staff as regulatory guidance.) It is against these

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regulations and guidelines that the Licensee's evidence on the criticality issues should be weighed.

C. Discussion

Four issues regarding criticality may conveniently be separated for analysis: (1) the question regarding the conservatism of the criticality analysis for the pool boiling condition; (2) the question regarding the possibility of supercriticality through optimum moderation; (3) the rack distortion issue; and (4) the pool debris issue.

1. *Criticality analysis for the pool boiling condition*

Three of Licensee's experts contributed to the criticality analysis of the spent fuel racks under pool boiling conditions. Dr. Prelewicz provided the thermal conditions for the criticality analysis. Dr. Gay performed a study to verify one of Dr. Prelewicz's assumptions. Finally, relying on these thermal conditions, Dr. Kim calculated the effective neutron multiplication factor, or chain reaction constant — abbreviated k_{eff} — for the storage racks.

The testimony of Dr. Prelewicz presents the thermal conditions that would occur in the Big Rock spent fuel pool if all cooling systems were lost. Dr. Prelewicz explains that saturation, or boiling, temperature of water is a function of pressure and will increase with depth due to the hydrostatic head of water in the pool. Once this temperature is reached, further energy input to the water results in generation of steam bubbles or voids (Prelewicz Testimony at 3). This maximum temperature, however, will not necessarily be reached. Dr. Prelewicz's analysis shows that although the saturation temperature at the bottom of the Big Rock spent pool is 243°F, a natural circulation process prevents this temperature from actually occurring. Because water becomes less dense and hence lighter as its temperature increases, a situation in which water temperature increases with depth is unstable. When heat is continuously added, a natural circulation flow is established, whereby heated water rises continuously to the surface near the center of the pool, while cooler water flows downward near the pool walls (Prelewicz Testimony at 4).

Dr. Prelewicz modeled this natural circulation flow in the most limiting location in the pool, using the computer code SFPT2. The model is based on one-dimensional circular flow. In one portion of this flow, the downcomer, colder water (being heavier) descends between the pool wall and the racks. In the upward flow, which passes through a row of fuel bundles, water is heated, ascending because it becomes less dense. The inlet temperature of the water at the bottom of the racks is taken as 212°F and its heat-up as it rises through the fuel bundles is calculated from an energy balance (Prelewicz Testimony at 5). This analysis

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shows that the water in the fuel bundle that becomes hottest will reach the saturation temperature of 237°F at 0.276 inch below the top of the bundle. The water temperature along the active length of the fuel will thus vary from approximately 212°F at the bottom to 237°F at the top, an average temperature of 224.5°F (Prelewicz Testimony at 6).

Once the saturation temperature is reached, further energy input to the water goes into the generation of steam voids. The length of the fuel over which this occurs, called the boiling length, is thus 0.276 inch (Prelewicz Testimony at 7). Dr. Prelewicz determined the extent of void formation in the boiling length from an energy balance equation. At the exit of the bundles the void fraction, or ratio of steam volume to total fluid volume, is 0.206. The void fraction will vary over the boiling length from zero where boiling starts to 0.206 at the exit (Prelewicz Testimony at 7).

To verify the assumption that the water entering the bottom of the fuel racks is 212°F, Dr. Gay performed detailed calculations of the natural circulation flow patterns in the Big Rock spent fuel pool using the GFLOW computer program that he developed. GFLOW models the pool in three dimensions and determines velocities and temperatures throughout the pool. The GFLOW analysis demonstrates that natural circulation patterns in the pool cause the water entering the bottom of the fuel racks to be approximately 212°F, thus verifying Dr. Prelewicz's assumption (Prelewicz Testimony at 8).

The Board conducted a very lengthy examination of Dr. Gay, since his GFLOW code has not previously been used for licensing purposes. Dr. Gay testified that the GFLOW predictions have been checked for mathematical consistency, that they have been compared to those of a conservative calculation for spent fuel pools and shown to be reasonable, and that earlier versions of the code were compared to experimental data in chemical reactors and proved correct (Tr. 1610). Most of the examination of Dr. Gay centered on the way in which his code modeled various aspects of pool geometry and hydraulic flows and need not be summarized here.

Although Dr. Gay's study predicts temperatures and circulation patterns throughout the pool, it was offered in evidence only to verify the assumption made by Dr. Prelewicz that the inlet temperature at the bottom of the racks would be approximately 212°F, which Dr. Gay testified is a normal assumption routinely made in spent fuel storage pool analyses (Tr. 1613). Consequently, although Dr. Gay reasoned persuasively about the assumptions build into his computer code, we do not believe it is necessary for us to determine the accuracy of his overall predictions. Dr. Gay testified that even if the overall predictions of the code as to maximum pool temperatures were not accurate, its predictions of the 212°F inlet temperature are very insensitive to the process of heat transfer involving the fuel elements themselves. They depend only on the circulation patterns in the downcomer from the top of the pool, a much easier thing to predict (Tr. 1630).

The Board initially had some difficulty visualizing the process by which water would descend along the pool walls with virtually no rise in temperature. Dr. Prelewicz however, explained this effect as follows: The cooler water would begin to descend over a much larger area than that of the eventual downcomer. At the inside edge of this descending stream, there would be a sacrificial interface mixing with the warmer water coming up, pushing it into the center and thus protecting the water nearest the pool wall from mixing (Tr. 1656-1663). Moreover, as Dr. Gay explained, GFLOW predicts that as the water descends, its temperature decreases from 212°F at the surface to as little as 206°F before reaching approximately 212°F at the inlet of the fuel racks (Tr. 1668). We note also that the Board asked Mr. Lantz, the staff's criticality expert, for guidance on whether it would be appropriate to rely on the GFLOW code for licensing purposes (Tr. 1692). Mr. Lantz testified that although he did not think the accuracy of the program had been completely proven, he believed it was perfectly adequate for the purpose of verifying the inlet temperature (Tr. 1930-1932).

Dr. Prelewicz testified that when Dr. Kim performed his initial criticality analysis for the Big Rock spent fuel pool, the thermal conditions that he was supplied with were a coolant temperature of 212°F and an exit void fraction of 20.6% (Prelewicz Testimony at 7). In view of the Board's concern about thermal conditions used for the criticality analysis and Dr. Kim's results, which show k_{eff} increasing with temperature, Dr. Prelewicz provided Dr. Kim with the following, more realistic, thermal conditions: the water temperature varies along the length of the fuel bundles from approximately 212°F at the inlet to 237°F at the exit; the average temperature over the active fuel length is 224.5°F; bulk voids exist only for the upper 0.276 inch of the channel; and the ratio of steam volume to total fluid volume is 0.206 at the exit (Prelewicz Testimony at 7-8).

Dr. Kim's testimony presents a new calculation of k_{eff} based on these more realistic thermal conditions. Dr. Kim initially points out what the other parties and the Board apparently had not understood previously, that this original analysis did not attempt to determine whether existing fuel stored at the Big Rock Point reactor would reach the maximum k_{eff} of 0.95. The purpose of his analysis was to determine the limiting fuel design by ascertaining the highest enrichment consistent with this maximum permitted value. All the existing fuel at Big Rock Point is much less reactive than this limiting fuel design (Kim Testimony at 4-5).

Dr. Kim explains that 212°F had been used in his earlier calculation because it had been an industry practice to use 212°F as the boiling temperature when considering the formation of small steam voids in a spent fuel pool. For most pools, this is conservative because k_{eff} decreases with increasing temperature. Dr. Kim's original analysis, however, showed that for the Big Rock pool, k_{eff} increases with temperature (Kim Testimony at 6). This positive correlation is attributable to over-moderated fuel racks (Kim at Tr. 1464-1465; Blanchard at Tr. 1850). When Dr. Kim performed this analysis, he was not aware that the water

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temperature varied from 212°F at the bottom of the racks to 237°F near the top (Kim Testimony at 6). Moreover, his result made use of the 212°F figure nonconservative. Dr. Kim therefore performed new calculations based on the thermal-hydraulic conditions provided in Dr. Prelewicz's testimony (*Id.*). Instead of a temperature of 212°F, the new calculations utilize a temperature of 224.5°F, the average temperature along the length of the fuel bundles (Kim Testimony at 7). This resulted in an increase of 0.0014 in k_{eff} over the previous analysis (*Id.*). Testimony elicited at the hearing further clarified the appropriateness of using this average temperature figure. Dr. Prelewicz testified that the temperature will rise in a linear fashion, making it appropriate to use the arithmetic mean. Dr. Kim concluded, based on his experience doing criticality analyses, that reactivity varies in a linear enough fashion to make use of the arithmetic mean appropriate. (Tr. 1522).

In his original calculation of k_{eff}, Dr. Kim assumed that the steam void volume fraction of 0.206 provided by Dr. Prelewicz was uniformly distributed along the entire height of the fuel assembly. He testified that this assumption was excessively conservative in relation to the actual void distribution because steam voids would occur only in the upper 0.276 inch of the fuel length (Kim Testimony at 7-8). When the more realistic average void fraction is calculated, it yields an increase in k_{eff} of only 0.00001, which can be ignored. Because the original analysis attributed an increase in k_{eff} of 0.0044 to steam voids, the new analysis produces a net decrease of 0.0044 in k_{eff} (*Id.*).

The effects of the revised steam void volume fraction and the revised average water temperature yield a net decrease in k_{eff} of 0.0030, so that the revised k_{eff} calculated by Dr. Kim is 0.9470, less than the permitted maximum of 0.95 (Kim Testimony at 8-9).

We find that Dr. Kim's analysis of k_{eff} assuming a total pool cooling system failure, supported as it is by the rationale for the thermal hydraulics conditions provided by Drs. Prelewicz and Gay, is both thorough and persuasive. At the hearing the Board examined Dr. Kim at length and found him to be not only intelligent, but a particularly frank and forthcoming witness. Moreover, the testimony of Mr. Blanchard, who is expert in both thermal hydraulics and criticality (Tr. 1798-1801), provides independent support for the accuracy of Dr. Kim's analysis. Mr. Blanchard testified that he had reviewed both the original criticality analysis and the revised analysis prepared by Dr. Kim and considered both analyses correct, given their assumptions (Tr. 1821-1822). Moreover, Mr. Blanchard verified those assumptions; he reviewed the initial conditions of the calculations, especially the fuel design, to determine that the analysis bounded any conditions that might exist in the Big Rock pool (Tr. 1823). Mr. Blanchard considers that the initial conditions assumed both in Dr. Kim's original analysis and his revised analysis are conservative (Tr. 1824).

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At the hearing, Intervenors' counsel subjected Drs. Kim and Prelewicz to extensive cross-examination intended to elicit testimony reflecting what Intervenors perceive as a record of inconsistencies in the calculation of k_{eff} indicative of deliberate manipulation of the results. Upon counsel's allegation of these inconsistencies (Tr. 1392-1398), we acceded to counsel's request for sequestered cross-examination of these two witnesses for the limited purpose of testing whether there were factual inconsistencies in communicating the premises for the criticality calculations (Tr. 1400-1415).

In part, Christa-Maria's allegations were based on a misunderstanding of Dr. Kim's original analysis. Their counsel examined Dr. Kim with regard to a workpaper from his analysis file showing a calculation of 0.9502 for k_{eff} (Tr. 1453-1454). As Dr. Kim explained, however, the purpose of his analysis was to derive by an iterative process the maximum fuel enrichment which would yield a value of 0.95 for k_{eff} (Tr. 1454-1459). In part also, we believe the record indicates a certain lack of communication between Dr. Prelewicz and Dr. Kim in their analyses. The two men performed their calculations in parallel and did not consult. Dr. Prelewicz did not know that reactivity in the Big Rock pool increased with increasing temperature (Tr. 1593-1594); Dr. Kim did not know that a temperature of 237°F was reached at the exit of the fuel bundles or that the boiling length was 0.276 inch (Kim Testimony at 6-8; Kim at Tr. 1509, 1513; Prelewicz at Tr. 1579-1580). We conclude, however, that the record in no way impugns the integrity of either Dr. Prelewicz or Dr. Kim nor diminishes the credibility of their testimony.

Mr. Lantz of the staff followed a somewhat different methodology in deciding k_{eff}. Mr. Lantz said he had no reason to doubt Dr. Kim's calculation of k_{eff} at various temperatures and water densities (Lantz Testimony at 5-6). He plotted these results as a smooth curve and determined that k_{eff} peaks at 212°F with a 1% steam void, which corresponds to a water density of 0.948 gm/cm^3 (*Id., see also* Intervenors Exhibit 5, "Criticality Analysis of Big Rock Point Spent Fuel Racks (High Density)," by Y. S. Kim (NUS Corporation, November 7, 1979) at 95-97, 131-133). Any variation from this optimum density caused by changes in temperature or void fraction would reduce k_{eff} (Lantz Testimony at 5, 7). Lantz concluded that k_{eff} for the Big Rock pool would therefore remain within the allowable limits (Lantz Testimony at 6).

In addition, Mr. Lantz supported the conservatism of Dr. Kim's calculation of k_{eff} by an independent method regarded as reliable by the staff; he compared the calculation for this pool to a curve derived from results in many other pools (Lantz Testimony at 6-7).

We are concerned about the adequacy of the staff's review and the soundness of its conclusions. In particular, staff's proposed findings at p. 8 suggest we adopt Mr. Lantz's conclusion that the curve that relates k_{eff} to water density reaches a maximum value for k_{eff} in the region of 0.95 density for water. In this view, which is different from the line of reasoning advanced by Dr. Kim, thermal-hydraulic data are of little significance. (See the data in the table on page 5 of Mr. Lantz's testimony and the reasoning of Mr. Lantz at Tr. 1973.) This reasoning is principally based on Mr. Lantz's conviction that k_{eff} varies primarily with changes in water density and that the effect of temperature is principally induced by the effect of temperature on water density. (Tr. 1946-47). He reasons further that since an apparent peak occurs at a density of 0.948, thermal-hydraulic variation is irrelevant, being incapable of generating greater values of k_{eff} (Tr. 1973).

We have searched out the source of the figures Mr. Lantz used for the table on page 5 of his testimony. The numbers apparently came from work by Dr. Kim (Tr. 1949), presented graphically at page 133 of Intervenor's Exhibit 5. (*See* Figure 1). Mr. Lantz plotted only the six points with the largest abscissas (the continuous line in Figure 1), tracing a curve that we consider to have two distinguishable parts: high density values where k_{eff} is influenced primarily by changes in temperature, and lower density values (0.96 density and less) where k_{eff} is influenced largely by changes in void fraction. Indeed, the curve is sharply concave downward for temperature-induced density variation, and it is slightly concave upward for void-induced density variation. We suspect that the "peak" to which Mr. Lantz ascribed significance may be an artifact resulting from the intersection of two distinguishable curves.

Further, the overall trend for the curve is upward with decreasing density. A small region of reversed derivative seems present on the right side of the void-induced density variation part of the curve (the part of the curve between about 0.85 density and 0.96 density in Figure 1). But, for another reason, generalization about this region is suspect.

Mr. Lantz analyzed a graph of Dr. Kim's data for G-1U fuel (see Dr. Kim's title on the graph in Figure 1; also see Intervenor's Exhibit 5, *passim*). The fuel at issue in this case, however, is G3 modified fuel (Intervenor's Exhibit 6). Dr. Kim did similar calculations for G3 fuel (Intervenor's Exhibit 6 at 45-47). In Figure 1 we have plotted these results (triangle plotting points) in order to examine the shape of the curve (the data understate the value of k_{eff} because they do not contain Dr. Kim's corrections for tolerances found at Intervenor's Exhibit 6 at 59 ff.). While the number of points is too few to precisely define the relationship, the "peaking" phenomenon (from which Mr. Lantz derives his favorable conclusions concerning safety) is not apparent in the data for G3 modified fuel.

We cannot accept as a basis for safety assurance a technical review that starts with a questionable assumption (that changes in k_{eff} are density-dominated) and reaches its conclusions from questionable inferences about a graphical analysis of data for a type of fuel we are not considering. Nor can we reject the suggestion that k_{eff} continues to increase as the density of water declines due to void formation. That effect *may* be an artifact of the PDQ 4-group calculation, as Mr. Lantz suggests (Tr. 1942). But that calculation is the best that we (or the staff) have to go

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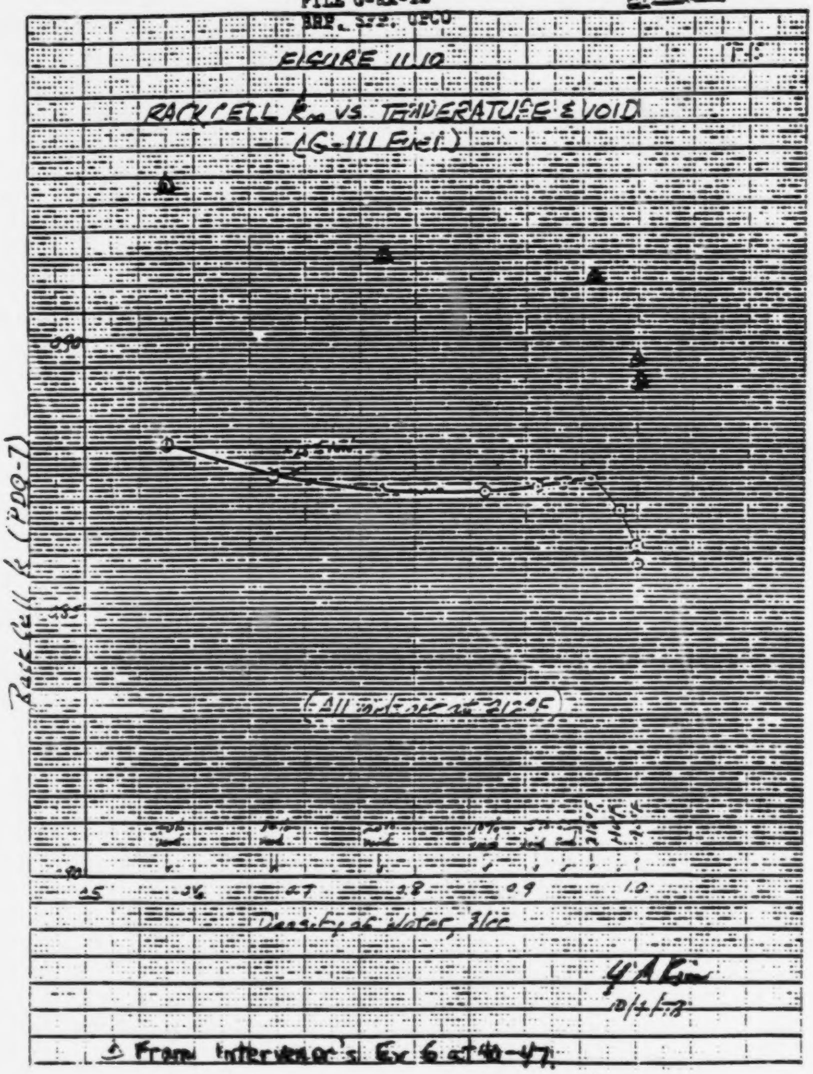

FIGURE 1. Variation of k_{eff} with Respect to Water Density

on. We cannot rely on expert intuition to refute it. Nor can we rely on Mr. Lantz's generalizations about other fuel pools whose specific characteristics may be quite different from those which caused the calculational problems in this case and, in any event, whose characteristics have not been introduced into evidence.

We conclude that Dr. Kim's view of criticality is preferable to that of Mr. Lantz. His testimony adequately analyzes the possibility of criticality occurring, assuming that all pool cooling systems have been lost and the pool has begun to boil. We believe that his calculations of k_{eff} at high water densities would be correct if his underlying assumptions about pool thermodynamics were appropriately conservative. However, as we explain below in Section II of this opinion, we do not accept Dr. Kim's assumptions as conservative because Dr. Kim's analysis depends on the non-conservative assumption that the fuel pool will remain full of water. Dr. Kim's model does not adequately consider the possibility of extended boil-off, as might occur during a TMI-2 type incident in which the containment could not be entered to gain access to the fuel pool. This might sufficiently reduce the water level to invalidate the assumption of a 212°F water inlet temperature at the bottom of the fuel racks. Although this extended boil-off might be averted if the makeup line applicant is installing is reliable, k_{eff} is intended to remain above 0.95 for *all* conditions in the pool and we conclude that it is not proper for us to consider a makeup line as mitigation of this requirement. In Section II of this opinion, we find that the Commission's guidelines do not allow an applicant to plan a spent fuel pool in which there are even unlikely circumstances, such as pool boil-off, in which k_{eff} may rise above 0.95.

2. *Potential for Supercriticality at Very Low Water Densities*

Dr. Kim's testimony addressed the supercriticality article mentioned above. Dr. Kim testified that this is but one of several articles that have recognized the possibility of supercriticality (k_{eff} greater than 1.0) occurring under conditions where the water in a spent fuel pool is replaced by mist, foam, or some other form of very low density water (Kim Testimony at 10-11). For such densities to occur at Big Rock Point, enough water would have to boil away for the surface to recede to the level of the fuel racks. Moreover, the article cited by the Board indicated that for stainless steel racks of the Big Rock Point type, supercriticality never exists even for very low water densities; the maximum k_{eff} is always less than 0.97 (Kim Testimony at 11).

Dr. Kim stated that no quantitative analysis with respect to supercriticality has been performed for the Big Rock spent fuel pool; normally such an analysis is required and performed only for new fuel storage racks under dry storage conditions, not for spent fuel pools (Kim Testimony at 12). The possibility of the water in the pool boiling away to the extent necessary to achieve the densities in question is extremely unlikely in view of the ability to remotely supply make-up water and the very long time required to boil away the water in the pool (*Id.*). Dr. Kim therefore concluded that the supercritical condition will not occur in the Big Rock pool under the assumed accident condition (Kim Testimony at 13). Moreover, according to Dr. Kim, the differences in calculated k_{eff} among different computer codes and methodologies alluded to by the authors of the cited article are comparatively small, at the densities that would prevail at Big Rock Point after the cooling system failure, and his analysis adequately accounts for them (Kim Testimony at 13).

Dr. Kim explained that the results of his calculations show k_{eff} going down between 0% and 20% void, then turning around at 15% to 20% and thereafter slowly rising (Tr. 1945). The maximum k_{eff} would occur in the region of more than 80% void, or less than 20% solid water (Kim Testimony at 12). Dr. Kim agreed with the authors of the cited article that differences between different computer codes and methodologies can be significant at very low water densities (Kim Testimony at 13). Moreover, Dr. Kim conceded that at very low densities the calculations he had performed could not be relied on for accuracy. He stated that accurate calculations of k_{eff} at void fractions at 40% to 50% require a different computer code, having more energy groups and different neutron transport calculations (Tr. 1944). Until he performed those more sophisticated calculations, Dr. Kim stated that he could not predict whether the value of k_{eff} would be higher or lower than that indicated by his previous calculations (Tr. 1952-1953).

Mr. Lantz also discussed the conclusions of the cited article in his testimony. Mr. Lantz testified that the article was in fact supportive of the evaluation and conclusions of the staff (Lantz Testimony at 8-9).

Mr. Lantz also testified that one would need more energy groups than Dr. Kim used to perform an accurate calculation of k_{eff} at low water densities. Moreover, he believed that these more sophisticated calculations would show k_{eff} continually decreasing with decreasing water density. He stated that a double peak in the curve of k_{eff} is not physically credible at Big Rock, given the thickness of steel in the fuel cans and the spacing between assemblies (Tr. 1942-1943, 1963-1966). He explained that this conclusion was based on his personal studies of reactor-core temperature and void coefficients, as well as parametric studies he had done for fuel assemblies, some of which were over-moderated, like those at Big Rock (Tr. 1953-1955).

Applicant also seeks to support the safety of the pool from supercriticality incidents by pointing out that a criticality analysis for spent fuel racks under what are essentially conditions of mist or foam normally have not been required or performed. Such analyses are performed for new fuel racks under dry storage conditions, as Dr. Kim pointed out; but the allowable limit for k_{eff} under these conditions, as he also pointed out, is 0.98, not 0.95 (Tr. 1847). Furthermore, Dr. Kim stated that the results given in the supercriticality article for a similar can thickness but a more enriched fuel than Big Rock's, indicate that k_{eff} never exceeds

0.97 for any water density (Tr. 1834-1835). Dr. Kim therefore concluded that the spent fuel in the Big Rock Point storage pool would not attain supercriticality under any conditions.

Despite these arguments, including Mr. Lantz's assurance, the tradition of not analyzing fuel pools for a mist environment, and Dr. Kim's interpretation of the supercriticality article, we believe there is substantial uncertainty about whether k_{eff} for the limiting fuel design calculated by Dr. Kim for the Big Rock spent fuel pool would be higher or lower than 0.95 at very low water densities. We do not regard the article on supercriticality as providing adequate safety assurance, since the article itself states that its analyses are subject to substantial error and those analyses were: (1) not done on the actual Big Rock spent fuel pool configuration, and (2) have not been subject to a careful safety review by the staff. Nor do we accept Mr. Lantz's intuitions about the shape of a curve that would be generated by analyses that have not yet been performed. Nor do we accept the tradition of overlooking the possibility of a mist environment in a fuel pool as binding, particularly with respect to a plant in which the fuel pool is located within the containment where it might be unaccessible during a TMI-2 type accident.

As applicant argues, very low densities of water could not occur without the pool water boiling off substantially, but our record leaves us very uncertain about the magnitude of the drop needed to surpass a k_{eff} of 0.95. For example, a drop of somewhere between a few feet and a drop all the way to the top of the fuel racks is necessary in order to attain a 40% void fraction, according to a "very wild guess" made by Dr. Prelewicz (Tr. 1854-1855). Since there also is substantial uncertainty concerning k_{eff} at high void fractions, we are not sure how quickly voids would occur that would raise k_{eff} above 0.95. Furthermore, we are very uncomfortable with the notion that standards applied to dry fuel that contains no substantial inventory of decay products should also be applied to a mist environment that might occur in a fuel pool after a substantial loss of water inventory.

3. *Possible Distortion of the Fuel Racks*

In response to the concern we expressed about whether the drop of a fuel assembly or heating of the pool might distort the fuel racks to the point of adversely affecting criticality, Licensee submitted the testimony of Raymond F. Sacramo and Dr. Kim. Mr. Sacramo testified that the drop of a fuel assembly onto a storage rack could distort the fuel assembly support plate at the bottom of the racks or the lead-in guides at the top of the rack, depending on the way it fell. In neither case, however, would there be any distortion of the rack along the length of the stored fuel assembly. Thus, the center-to-center distance between the storage cans would be maintained (Sacramo Testimony at 3-4). Because of this fact, Dr. Kim testified that such an accident would not change k_{eff} (Kim Testimony at 9).

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Mr. Sacramo testified that as the water temperature of the pool increases the stainless steel racks will expand. The maximum temperature increase calculated by Dr. Prelewicz would produce an increase in the center-to-center spacing of the storage cans of 0.015 inch over the nominal value of 9 inches (Sacramo Testimony at 5). Dr. Kim testified that this would result in a *decrease* of 0.0018 in k_{eff} (Kim Testimony at 9-10). (For purposes of conservatism Dr. Kim did not take credit for this decrease in his calculation of the value of k_{eff} (Kim Testimony at 10). We note, however, that if he had done so his calculation of k_{eff} would have decreased from 0.9470 to 0.9452.)

Mr. Lantz also addressed this issue in his testimony and his conclusions were the same as those of Licensee's witnesses (Lantz Testimony at 7). There was no cross-examination on this issue at the hearing. We find the testimony of the witnesses credible and conclude that the concerns we expressed earlier have been satisfied.

4. *Possible Blockage of Natural Circulation by Debris*

As noted earlier, on May 3, 1982, we had read applicant's analysis of the thermodynamics of the pool, on which it relied to establish the inlet temperature at the bottom of the spent fuel racks. Because this analysis appeared to depend on the assumption that there was an unimpeded circulatory pattern in the pool, we asked the parties for comments on whether anything in the geometry of the pool or racks or any debris that might fall into the pool could alter natural circulation patterns, thus possibly affecting k_{eff}.

In response to these questions, Licensee submitted the testimony of David P. Blanchard, a Technical Engineer stationed at Big Rock Point. Mr. Blanchard is expert in both thermal hydraulics and criticality and has, in addition, a first-hand knowledge of plant operation on a daily basis. Mr. Blanchard testified that there are no features in the design of the fuel pool, the storage racks or the fuel elements that would substantially alter natural water convection currents which were not considered and adequately accounted for in the testimony and analysis of Drs. Prelewicz and Gay (Blanchard Testimony at 4). Water circulation is slightly altered by the storage of various small hardware items in the pool, but this effect is minimal because of the small volume of this hardware; moreover, such effects are adequately accounted for in the analysis of Drs. Prelewicz and Gay (Blanchard Testimony at 3-4).

With regard to possible reduction of natural circulation flows from the introduction of debris into the pool, Mr. Blanchard initially stated that because Dr. Kim's analysis assumes an infinite array of fuel assemblies, localized increases in the temperature and void fraction of individual assemblies will not significantly alter k_{eff} (Blanchard Testimony at 5). A large amount of debris would have to enter the pool, producing flow restrictions in many of the racks, before a significant increase

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in reactivity would occur (*Id.*). After examining the Big Rock spent fuel pool, Mr. Blanchard determined four potential sources of debris during normal operation and accident conditions. He concluded that none of them would result in significant alteration of convection circulation currents in the fuel pool (Blanchard Testimony at 6).

Particulate matter commonly called "crud," consisting mainly of iron oxide, is introduced into the pool from the reactor coolant during normal refueling operations. This crud does not build up, however, because the pool water passes through a set of filter socks during both refueling and normal power operation. Therefore, crud has no detrimental effect on natural circulation (Blanchard Testimony at 7-8). Crud could also be introduced into the pool in the make-up water that might have to be supplied to the pool following a loss-of-coolant accident. The introduction of significant amounts in this way, however, is limited by the fine-mesh strainers through which water for the post-incident recirculation system must pass (Blanchard Testimony at 8-9).

The third potential source of debris consists of paint and coatings on surfaces within containment above and around the pool. The possibility exists that such coatings could flake or peel and fall into the pool as a result of the high temperature, moisture and radiation that would be caused by a loss-of-coolant accident. Mr. Blanchard testified, however, that the Licensee has evaluated these surfaces for such accident conditions and concluded that no significant loss of these coatings would occur (Blanchard Testimony at 9-10). Any flaking within containment would be limited to very localized effects (Blanchard at Tr. 1804-1805). Mr. Blanchard concluded that paint flaking would not introduce debris into the pool under the assumed accident condition (Blanchard Testimony at 10).

The fourth potential source of debris is the steam drum blowout panel. This panel, mounted over the reactor deck, is filled with aggregate — rocks one to two inches in diameter — to provide biological shielding for the reactor deck. The panel is intended to equalize pressure within containment after a loss-of-coolant accident by "blowing out" and falling on the reactor deck. If this happened, a small portion of the aggregate within the easternmost section of the panel could slide into the pool (Blanchard Testimony at 10-11). Mr. Blanchard testified at the hearing that the majority of any aggregate that might fall into the pool would fall into the southwest corner, where there is no fuel (Tr. 1812). This is the area of the pool where casks are lowered to be loaded. The closest fuel rack is located some seven feet from the edge of the pool where the panel would be lying and does not contain fuel (Tr. 1812). Any effects of the aggregate would be limited to a few fuel assemblies (Blanchard Testimony at 11).

We conclude that nothing in the record casts doubt on Mr. Blanchard's conclusion that there is no credible scenario in which debris could fall in the spent fuel

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storage pool and substantially alter natural water convection currents. The question raised in our memorandum of May 13 has therefore been satisfactorily answered.

II. THE BOARD'S CONCLUSIONS

While we accept most of the factual conclusions set forth by the applicant in its exceptionally skillful brief, we disagree with its ultimate conclusions, for reasons that we will summarize in this portion of our opinion.

First, we believe that the 0.95 k_{eff} limitation generally applied by the staff should be rigorously applied to spent fuel pools, including application to all conditions that may be found in those pools. Second, even were we to apply a more lenient standard to the pool, we would accept a portion of Dr. Kim's testimony, adverse to the position of his client in this proceeding, that the calculational methods so far employed for this fuel pool are not adequate to give confidence that k_{eff} will remain below 0.95 once the density of water had declined below 0.50 (Tr. 1944).

Second, since we have rejected staff's safety assurances based on Mr. Lantz's analysis of a curve relating k_{eff} to water density for a different fuel density than the one being employed, we must rely on Dr. Kim's analysis. That analysis of k_{eff} relies on a water inlet temperature of 212°F, supplied to Dr. Kim by Dr. Gay's GFLOW model.

Yet the GFLOW model is experimental and has not been validated. It has not met the test of validity of the consulting firm that created it nor has it had any empirical testing. (Tr. 1607-1612.) In addition, the model has only been applied to a situation in which the pool remained full, in which case the model indicates that boiling would not occur. However, if the pool level declined so that the model would predict that boiling would occur, Dr. Gay admitted that GFLOW might go "wild." (Tr. 1628-1629.) Hence, we have no evidence concerning the amount of boil-off required, during a TMI-2 type accident, to make the pool boil rapidly enough to substantially exceed the void formation assumptions used by Dr. Kim to calculate k_{eff}. (*See* the testimony of Dr. Prelewicz at Tr. 1854-1855 concerning the rate of boil-off in the pool.) Consequently, applicant has failed to demonstrate to our satisfaction that k_{eff} would remain below 0.95 under conditions of rapid pool boiling.

The importance of the limitation of the neutron multiplication factor (k_{eff}) to 0.95 is eloquently addressed in the SER (staff Exhibit 1), at the top of p. 3-2. We have added our own emphasis to this passage:

> The NRC acceptance criteria for the criticality aspects of fuel storage racks is that the neutron multiplication factor in spent fuel pools shall be less than or equal to 0.95, including *all* uncertainties, under *all* conditions, throughout the life of the racks. This 0.95 acceptance criterion is based on

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> the *overall uncertainties associated with the calculational methods*, and it is our judgment that this provides sufficient margin to preclude criticality in fuel pools. Accordingly, there is a technical specification which limits the neutron multiplication factor, k_{eff}, in spent fuel pools to 0.95. Since *the neutron multiplication factor in spent fuel pools is not a quantity which is measured with good accuracy*, the only available value is a calculated one. To preclude any unreviewed increase, or increased uncertainty, in the calculated value of the neutron multiplication factor which could raise the actual k_{eff} in the fuel pool above 0.95 without being detected, a limit on the maximum fuel loading is also required. Therefore, we find that the storage racks proposed for Big Rock Point will meet the NRC criteria when the fuel loading in the assemblies, described in the applicant's submittals, is limited to 28.3 grams of uranium-235 per axial centimeter of fuel assembly or equivalent. We will require a Technical Specification to limit the fuel loading to this value prior to the use of the new racks.

We find that applicant has not shown that its fuel storage racks meet this criterion, set forth in the SER for this plant. Furthermore, we are not persuaded that there is any reason to vary from this criterion by adopting applicant's innovative suggestion that we apply Standard Review Plan, NUREG-0800, July 1981, §9.1.1, which permits a k_{eff} of 0.98 for *new fuel racks* under dry storage conditions.

Applicant has not demonstrated that these racks will have a k_{eff} of less than 0.95 when they are still quite wet. Hence, there is not even a semantic argument for applying §9.1.1. Additionally, we have not been persuaded to apply the dry storage standard when the pool has almost boiled dry. The pool is a waste dump containing an extensive inventory of fission products that do not exist in dry, unirradiated fuel. Considering the large amount of fission products that might be dispersed should a criticality accident occur in the pool, we see no reason for *any* leniency about k_{eff}. The risk associated with such an accident is too grave to take. Further, we note that this is simply a waste dump and there is no technical reason why waste dumps cannot be made safe from criticality accidents.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 29th day of October, 1982,

ORDERED

(1) Consumers Power Company shall, within 60 days, amend its petition so that the k_{eff} in its spent fuel pool will not exceed 0.95 under any conditions, including extremely low densities of water.

(2) Prior to our consideration of applicant's filing, under paragraph (1) of this order, the staff shall review and thoroughly evaluate applicant's filing, including

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its conformity to this decision and the appropriateness of each method and each assumption used to comply with our order.

(3) This is an initial decision of the Atomic Safety and Licensing Board and may be appealed pursuant to the applicable rules and regulations and to the October 4, 1982, decision of the Atomic Safety and Licensing Appeal Board.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Oscar H. Paris
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 1459 (1982) LBP-82-98

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2)

October 29, 1982

The Board admits three late-filed contentions, dealing with risks to control systems from turbine missiles, the need for in-core thermocouples to indicate the adequacy of core cooling, and the ability to detect and mitigate steam erosion in valves and piping. One contention, dealing with concerns raised by a former General Electric Company engineer about the integrity of the containment, is denied without prejudice to refiling. Contentions about the thermal-hydraulic response of the core to a seismic event and about the proper fire-suppression system for the control room are excluded.

The Board rules that good cause for late-filing may be furnished when the Staff changes a prior position on an issue. Although this may not affect the availability of knowledge about the issue, it does affect an intervenor's reasonable decisions about how to manage its resources.

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RULES OF PRACTICE: SPECIAL RULE ON REPLIES CONCERNING LATE CONTENTIONS

In this case, the Board established the special rule that intervenors must file replies to applicant's arguments concerning the admissiblity of late-filed contentions. If an intervenor's required reply does not address sections of the FSAR indicated by the applicant to be dispositive of a late-filed contention, the Board will accept applicant's version of the facts. However, applicant may not shift the burden of going forward in this manner to the intervenor by referring to a document that is not available to the Board.

RULES OF PRACTICE: LATE-FILING

The change of a staff position on an issue can contribute to good-cause for late filing of a contention because it affects intervenor's reasonable management decisions about where to concentrate its resources.

TECHNICAL ISSUES DISCUSSED

Containment design (concerns of Mr. John Humphrey)
Effect of seismic events on core thermohydraulics
Fire-suppression in the control room
In-core thermocouples
Steam erosion: detection and mitigation
Turbine missiles

MEMORANDUM AND ORDER
(Concerning Ohio Citizens for Responsible Energy's Late-Filed Contentions 21-26)

On August 18, 1982, Ohio Citizens for Responsible Energy (OCRE) moved for leave to file contentions 21 through 26, dealing with risks to control systems from turbine missiles, the integrity of the containment (Humphrey concerns), the risk of power excursions from the thermal-hydraulic response of the core to a seismic event, the need for in-core thermocouples to indicate the adequacy of core cooling, the ability to detect and mitigate steam erosion in valves and piping, and the adequacy of the control room fire suppression systems.

For reasons discussed below, we have decided to admit into this proceeding the contentions on turbine missiles, in-core thermocouples, and steam erosion. The

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fire suppression contention will not be admitted. In addition, we deny the admission of the Humphrey concerns without prejudice to refiling, so that OCRE may resubmit this contention after it obtains information (that is not now available) about the relationship of the Humphrey concerns to the Perry Nuclear Power Plant (Perry).

I. TURBINE MISSILES

A. The Contention

OCRE contends that

> The placement and orientation of the Perry Nuclear Power Plant (Perry) turbine-generators are unacceptable because low trajectory turbine missiles could strike safety related targets, thereby endangering the safe operation of the facility.

As basis, OCRE cites the Perry Safety Evaluation Report (SER), NUREG-0887, that identifies this issue as an open item. It also cites the Advisory Commission on Reactor Safety (ACRS) Report on Perry (July 13, 1982) as having "expressed dissatisfaction with the progress being made on the resolution of this issue." It relies on a report, Gilbert Associates, Inc. Report No. 1848, "An Analysis of Low Trajectory Turbine Missile Hazard to the Perry Nuclear Power Plant, Units 1 & 2" (October 8, 1976) (Gilbert Report), as establishing that the control room, cable spreading room, auxiliary building, electrical penetration area and Units 1 and 2 reactor buildings are within the "low trajectory missile strike zone." In its reply, it also cites Reg. Guide 1.115 as establishing that the preferred method of protecting against such missile strikes is to design the facility so that safety systems are outside the target zone.

B. The Argument

The Staff of the Nuclear Regulatory Commission (Staff) believes that this contention meets the requirement that its basis be stated with reasonable specificity. 10 CFR §2.714(b). Cleveland Electric Illuminating Company, et al. (applicant), on the other hand, argues that the Gilbert Report cannot be a proper basis for the contention because that report concluded that the "probability of a turbine missile causing unacceptable damage is within our acceptance criteria" because the chance of damage to a safety system from a turbine missile strike, per turbine, was less than 1.5 per 100 million per year (1.5×10^{-8} per year per turbine).

OCRE has replied that the Staff at the Construction Permit stage calculated that the probability of a strike of safety-related targets exceeded the standard established by Reg. Guide 1.115, Revision 1. Applicant's response, in an authorized filing that responded primarily to new matter raised in OCRE's reply, apparently

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abandoned direct opposition to this claim of basis, noting in passing that the Staff's ultimate conclusion at the Construction Permit stage was that its calculated probabilities met its acceptance criteria.

C. Conclusion on Basis for the Contention

We agree with OCRE and the Staff that there is a basis for this contention. Reasonable doubts about the protection of safety-related equipment from turbine missiles have been raised. OCRE relies on a portion of the Gilbert Report. It is not required to accept the entire logic of a report merely because it relies on a section, particularly when it presents specific reasons for rejecting the probabilistic discussions that led to the report's conclusions. Furthermore, OCRE relies on the ACRS and on the Staff's SER, both of which indicate that they have not been satisfied about this issue.

Were we to deny the admissibility of this issue, we would be gutting the public hearing process. OCRE has demonstrated that there are serious doubts about a very particularized safety issue. It wishes to participate in the resolution of the issue by conducting discovery, to inform itself, and by participating in a hearing. Another advantage that this process gives to OCRE is that it may participate in discussions leading to the settlement or acceptable resolution of this issue.

When the public entertains reasonable doubts about an issue, based on a review of available technical literature, that issue is admissible.

D. Conclusions on Lateness

Applicant and Staff deny that OCRE had good cause for filing this contention late. They present us with this apparent paradox: OCRE relies on the Gilbert Turbine Missile Report and Regulatory Guide 1.115 (Rev. 1), both of which were published prior to 1977. How can OCRE now have good cause for late filing?

However, OCRE has a complete response. It states that the Perry SER, dated May 1982, first put it on notice of the seriousness of this issue and that the July 13, 1982 report of the ACRS also highlighted this problem.

It further argues that the Construction Permit SER stated that this issue had been resolved but that the Operating License SER considers the issue unresolved. Hence, it was not previously on notice that there were potential problems. Now it is. Applicant correctly argues that Staff's position indicates only that it intends to take a "second look" at the issue. While that fact may not be enough to create the basis for a contention, it is the stuff of which good cause for late filing may be constructed.

We accept this response because we do not consider it realistic to expect an intervenor to be conversant with the entire SER and the entire record of the

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construction permit stage when it first files contentions. A reasonable course for the intervenor to follow is to await scientific publications and key Staff documents as a focus for its efforts. In that way, an intervenor can identify significant issues for trial, relying on professionals who spend full time on nuclear issues to identify the areas worth pursuing.

We have decided that the factors for late filing listed in 10 CFR §2.714(a)(1) have been met and that this contention should be admitted as an issue in the proceeding. The only other means whereby petitioner's interests may be protected are Staff's analysis, but Staff always may be counted upon to analyze safety issues and we do not consider their interest to weigh heavily in the balance. Furthermore, we believe intervenor's discussion of this issue has been indicative of substantial scientific sophistication in reading, comparing and analyzing scientific documents; hence, we expect OCRE to contribute to the development of a sound record. There are no other parties representing OCRE's interests. There will, of course, be some broadening of issues and a potential for delay, but we do not consider this factor to outweigh the others.

II. CONTAINMENT CONCERNS OF J. R. HUMPHREY

A. The Contention

This contention consists of 22 major issues and 66 total sub-issues, all dealing with Mark III containments. Each of these sub-issues was incorporated by reference into the contention.

The Perry SER, Supp. No. 1, August 1982 (SSER 1) sets forth the history of this contention, as follows:

> In a letter dated May 8, 1982, Mr. John Humphrey, a former engineer [lead systems engineer for containment] with the General Electric Company (GE), notified Mississippi Power and Light Company (MP&L) of certain unresolved safety issues regarding the Grand Gulf Nuclear Station (Grand Gulf) Mark III containment design. The staff met with MP&L, GE, and Mr. Humphrey to determine the character of those concerns and to establish an appropriate program for their resolution. Other Mark III plant applicants attended the meeting, including the Cleveland Electric Illuminating Company, for Perry.
>
> The staff is currently reviewing these containment issues in conjunction with its review of the Grand Gulf design. In letters dated June 23, 1982 and July 14, 1982, these issues were identified to the applicant with a request that each issue be addressed on a Perry plant-specific basis with a schedule as to when this information will be provided for staff review.
>
> On the basis of a preliminary assessment of the 23 major items . . . the staff finds that all but 2 of these issues have either had some prior

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> consideration or do not represent significant safety concerns. (The staff still has to clarify and confirm a few of these items.) The staff will review all the items after the information for Perry requested from the applicant is received. *The staff also expects that substantial confirmatory analyses and tests will have to be performed and that they can be completed before an operating license for Perry Unit 1, is issued. These analyses and tests will need to be defined in the forthcoming schedule from the applicant associated with these items.*
>
> Two items which the staff believes warrant priority attention include (1) the effects that structural encroachments over the suppression pool might have on pool swell and impact loads and (2) the response of the residual heat removal (RHR) system, when it is used in the steam condensing mode, to loads produced by the steam condensation phenomenon. . . .

[Emphasis added.] SSER 1 at 6-1.

B. The Argument

Applicant and Staff argue that OCRE must adequately specify the basis for each of its subcontentions, including showing how each subcontention is related to the Perry plant, citing our own decision, LBP-82-15, 15 NRC 555, 557-60 (March 3, 1982), quoting from *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977); *see also Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982) ("a licensing board is not authorized to admit conditionally, for *any* reason, a contention that falls short of meeting the specificity requirements." *Id.*, at 467 [emphasis in original]).

With respect to the first item the Staff cites as needing priority attention, applicant cites the Perry SER Supplement 1, at 6-1, which says that the Staff expects to meet with applicant and GE and to review their data and analyses. With respect to the second item, applicant states that it is committed to Staff's tentative solution, that the RHR system not be used in the steam condensing mode. OCRE's response has not specified why this solution is inadequate.

C. Conclusion

We recognize that when a man of Mr. Humphrey's position resigns with substantial reservations about the safety of the containment buildings for which he has been professionally responsible, this event raises substantial public interest, particularly among people who were previously doubtful about the safety of nuclear power generation. Furthermore, we recognize that Mr. Humphrey's concerns are very technical in nature and that even the author of these concerns

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could not readily determine whether the concerns were applicable to a particular plant.

We also note that the SSER promises further Staff review after applicant supplies additional information, including "substantial confirmatory analyses and tests." We infer that Staff was sufficiently unsure of the applicability of the Humphrey concerns to Perry that it required applicant to respond to the concerns and it is taking the issues sufficiently seriously to review the responses.

There is little question that the 66 Humphrey concerns are each specific, putting applicant on notice of what is required. Furthermore, the fact that Mr. Humphrey raised these concerns and that Staff has chosen to inquire further gives them a basis.

We are convinced that for a matter of this potential importance, the criterion governing good cause for late filing is met. The Humphrey concerns are sufficiently recent for us to consider OCRE's response timely.

With respect to one of the Humphrey concerns, we must rule pursuant to the mandatory reply procedure we have established that there is no basis for it. This concern was one the Staff identified as having high priority, was specifically discussed by applicant in its response, and has been set forth above. Applicant stated that it solved the problem by committing not to use the RHR system in the steam condensing mode. Since OCRE's reply did not deal at all with this specific response, we accept applicant's explanation. (However, we will not permit applicant to rebut the encroachments issue by referring generally to a document that we have not seen and that, for all we know, OCRE also does not have.)

With respect to the other Humphrey concerns — those considered of lower priority by Staff — OCRE has not yet demonstrated its ability to contribute to a sound record. Furthermore, this extensive list of unsifted concerns raises grave questions concerning the broadening of issues and delay of the proceeding. Consequently, at this time, we rule that the criteria of 10 CFR §2.714 have not been met and that this contention (or group of contentions) is not timely.

However, we note the difficulties both of Mr. Humphrey and of the Staff in determining whether these issues are relevant to Perry. We also note that OCRE has been able to persuade us of its ability to contribute to a sound record on other technical issues. Consequently, we dismiss this contention without prejudice to refiling, pending the availability of applicant's answers to Staff questions. Should OCRE promptly file an analysis of those answers, demonstrating a safety relationship between one or more of the Humphrey concerns and the Perry plant, we will then consider its filing to be timely and will consider whether the criteria for late filing have been met. Obviously, each of the criteria for late filing will be relevant, including criterion (v), relating to "delay," so that OCRE would be well advised to distill the Humphrey concerns into those issues it considers relevant to Perry.

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Even with respect to the specific issue on which we have ruled that basis was not shown because of OCRE's failure to reply, we would reconsider this ruling if OCRE should subsequently demonstrate that it has new information, not available to it at this time, that indicates that this is a serious safety issue, despite applicant's response.

The Humphrey concerns shall not now be admitted as an issue in this proceeding.

III. SEISMIC EVALUATION OF CORE THERMOHYDRAULICS

A. The Contention

This contention is that:

> Applicant's seismic analysis (and the NRC Staff's review of same in the SER) is deficient because this analysis totally neglects the response of the core thermal-hydraulic design to a seismic event. Because the BWR uses a two-phase moderator/coolant, it is inherently susceptible to power excursion transients resulting from events affecting void distribution. An earthquake could cause sloshing of the water in the reactor vessel, thus resulting in void collapse and/or redistribution.

OCRE cites Dr. Richard E. Webb, *The Accident Hazards of Nuclear Power Plants* (University of Mass., 1976) at 28 as its basis for this contention.

B. The Argument, and Conclusion Concerning Basis

Staff states that this contention meets the specificity and basis requirements.

Applicant attempts to discredit the Webb passage in three ways. First, it states that Webb "provides no references, citations or analyses" in support of his theory. Second, a recent review of the Webb book is used to undercut its credibility. Third, applicant's counsel states, with no expert support, that there are only two ways to collapse voids in a BWR core (increased pressure or increased core flow); it then cites two FSAR sections which allegedly analyze these two ways.

We find that applicant's attempt to undermine the basis for this contention is without merit. It cannot undercut the credibility of an expert in order to exclude a contention. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1) ALAB-590, 11 NRC 542 (1980). Furthermore, while our procedures permit applicant to cite FSAR sections, thereby placing the burden of going forward on the intervenors to explain why those sections are not fully dispositive, applicant has not cited the FSAR or other available, authoritative material and it may not refute a contention by an unsupported ("*ipse dixit*") statement of counsel.

Consequently, we find that this contention has basis.

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C. Late-Filing, and Overall Conclusion

In its reply filing, OCRE concedes that it lacks good cause for late filing because it relies on a book that has been available for six years. It seeks to have the contention admitted because of the balance of factors affecting late filing.

However, other factors also mitigate against admitting this contention. OCRE's reply criticized applicant for making an "*ipse dixit*" assertion. It was good argument, and we have accepted it for the purpose of deciding that there is basis for the contention. However, OCRE failed to suggest any technical explanation for how void collapse could occur in any way other than that suggested by counsel for the applicant. If OCRE had any relevant technical knowledge, it should have displayed it in order to convince us that it could contribute to developing a sound record. Since it did not do so, we conclude that OCRE has not demonstrated its ability to contribute to developing a sound record on this particular contention.

Three other relevant factors produce a small balance in favor of OCRE, but not enough to tip the overall balance. There is no other available means for OCRE to protect its interest. There are no other parties representing its interest on this issue. There would be some potential for delay, but the issue is so well focused that the potential for delay would not be great.

We agree with the Staff on this issue. We conclude that this contention should not be admitted as an issue in this proceeding because the criteria for late filing have not, on balance, been met.

IV. IN-CORE THERMOCOUPLES

A. The Contention, and Conclusion on Basis

This contention is that:

> In-Core thermocouples should be used at PNPP in conformance with the requirements of Regulatory Guide 1.97, Revision 2, and TMI Action Plan item II.F.2. In-core thermocouples provide an indication of inadequate core cooling (ICC) and are a redundant and diverse means by which to detect reactor coolant level.

The bases for the contention are the Reg. Guide and Action Plan items referred to, plus an analysis performed by Battelle Laboratories and described in a letter by C. L. Wheeler and *The Accident Hazards of Nuclear Power Plants* by Dr. Richard E. Webb, at 59-61.

Staff argues that the contention has met the basis and specificity requirements. Applicant argues that a Regulatory Guide does not establish a requirement and therefore cannot provide a basis for a contention.

We accept the premise of applicant's argument, concerning the nonbinding effect of a Regulatory Guide; however, we find the conclusion to be a non sequitur.

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The existence of a Regulatory Guide suggests a Staff preference. Although another approach may prove to be acceptable, it is permissible to use a Regulatory Guide to indicate expert opinion. When the expert opinion is that BWR reactors should have in-core thermocouples, this represents an opinion that these are necessary safety features. Hence, while the Regulatory Guide does not establish a requirement, this particular Regulatory Guide does provide the basis for a contention.

B. Lateness, and Conclusions on Admissibility

OCRE's explanation for filing this contention late is that the Staff has only recently changed its opinion on this issue, previously having required in-core thermocouples. OCRE claims it first learned of this difference when it received the Perry SER.

Applicant argues that OCRE should have learned of the Staff's change of position from the Grand Gulf SER, because OCRE is following that proceeding closely; but that SER was issued almost simultaneously with the Perry SER, making little practical difference. Applicant also argues that SERs in other cases gave public notice of the change in Staff's position. However, we are unwilling to impose such a broad knowledge standard on OCRE.

In a more serious vein, applicant argues that its unwillingness to comply with the Regulatory Guide has been known to OCRE, on this record, since October 1, 1981, when applicant informed the Staff of its firm position in opposition to in-core thermocouples. Furthermore, we are persuaded that OCRE's own behavior in filing Freedom of Information Act requests on this subject indicates that it understood that the issue was a contested one.

So, we have a clear case. OCRE knew of the existence of a dispute but chose to rely on a Staff position. When it learned that Staff had changed its position, OCRE chose to file a contention. We find OCRE's behavior to be entirely rational. With limited resources, it may appropriately conserve its limited resources by relying on positions of the Staff that are in agreement with their own position, even if the Staff's position is disputed by applicant. Consequently, when Staff changes its position and thereby affects OCRE's management decision, OCRE has good cause for late filing.

We also find that OCRE has demonstrated familiarity with several of the key documents and has shown its industry in filing Freedom of Information Act requests even before its contention was admitted. We believe it would contribute to a sound record on this issue. The only adverse criterion under 10 CFR §2.714 is the broadening of issues and the potential for delay. However, this contention is quite specific and should not inordinately contribute to delay.

Hence, we find that on balance the factors under 10 CFR §2.714(a)(1) are met and this contention should be admitted as an issue in this proceeding.

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V. STEAM EROSION

A. The Contention, and Conclusion on Basis

This contention is that:

> Applicants are not prepared to prevent, discover, assess and mitigate the effects of steam erosion on components of PNPP which will be subjected to steam flow. Steam erosion has been identified as the cause of recent failures of valves and piping (MSIVs and turbine exhaust lines: *see* NRC [Inspection & Enforcement] Information Notices 82-22 and 82-23). The Staff has identified Applicants' lack of an inservice testing program for pumps and valves and leak testing of valves as an open item in Section 3.9.6 in the SER.

Staff states that the contention meets the basis and specificity requirements governing the admission of contentions. Applicant's objections are almost without substance. Applicant claims that Information Notice 82-22 did not require any immediate action. That is irrelevant. What is important is that it pointed out a significant problem.

Applicant also seeks to characterize this contention as a statement that:

> Applicants' still to be submitted inservice inspection program meeting ASME requirements will be inadequate because "presumably" the plants experiencing steam erosion problems had inspection programs meeting ASME requirements.

However, the admission of a contention does not require anticipation of the contents of a document that has not been filed. A contention may address any current deficiency of the application, providing the contention is specific. In this instance, OCRE has not only asserted a deficiency in the application with specificity but has indicated why it believes that a subsequent filing of the applicant's cannot be expected to cure the deficiency. That is more than OCRE need do. (Since the contention is specific, the admonition of Catawba, *supra*, 16 NRC 460, 467, concerning the conditional admission of a vague contention, is not applicable.)

B. Lateness, and Conclusion on Admissibility

Applicant concedes that these contentions are filed in a timely fashion because the notices cited by intervenors appear to be the first generic statement on this issue. Staff says there was a 60-day delay in filing the contention and finds that delay inexcusable. However, Staff states that the first notice was published on July 9, 1982. Since the filing of new contentions took place on August 18, 1982, that is only a 40-day delay. We do not consider that excessive and need not rule on whether 60 days would have been too much.

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OCRE's alertness to this new issue and its understanding of the potential significance of these notices indicates that it is likely to contribute to the development of a sound record. There are no other means to protect its interest and no other parties to represent it. Since the contention is specific, broadening of the contention is commensurate with the need to determine the merits of the controversy.

On balance, the factors governing the admission of late contentions are satisfied. This contention shall be admitted as an issue in this proceeding.

VI. CONTROL ROOM FIRE SUPPRESSION

In this contention, OCRE asks that all advantages and disadvantages of two control room fire suppression systems, carbon dioxide and Halon 1301, should be thoroughly evaluated. Since applicant is planning to install a carbon dioxide system, and not a Halon 1301 system, the Staff interpreted this to be a contention limited in effect to the carbon dioxide system contained in the application. Applicant also responded in greater depth concerning the alleged disadvantages of carbon dioxide, which is its choice for a system.

Applicant's defense of carbon dioxide was quite extensive, including a reference to two letters and FSAR §9.5.1.2, said to respond to any concerns specific to Perry. Applicant also argues that OCRE has not provided a nexus between the generic concern about proper control room fire control systems and the Perry plant.

In its reply, OCRE made it clear that it was not challenging the use of carbon dioxide, which is the system included in the application. Instead, OCRE insisted it was just urging Staff to carefully consider the advantages and disadvantages of the competing systems. In this form, as clarified by OCRE, this is advice or imprecation but it is not a contention. Hence, it cannot be admitted. Were it a proper contention, we would exclude it as lacking in basis — because OCRE did not address the sections of the FSAR quoted by applicant despite our outstanding order requiring replies to address such issues — and we would also dismiss it as late-filed. On balance, we would consider OCRE's failure to address the technical issues raised by applicant to indicate that it was not prepared to contribute to a sound record on this issue.

Should applicant later decide to shift to a Halon 1301 system, that might provide OCRE with good cause for late filing of that contention.

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VII. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 29th day of October, 1982,

ORDERED

(1) The following contentions are admitted as issues in this proceeding:

Issue #13: Applicant has not demonstrated that the placement and orientation of the Perry Nuclear Power Plant turbine-generators is in compliance with regulatory requirements that limit the risk that low trajectory turbine missiles will strike safety-related targets, thereby endangering the safe operation of the facility.

Issue #14: Applicant has not demonstrated that the Perry Nuclear Power Plant will meet regulatory safety requirements unless it installs in-core thermocouples, as suggested by Staff regulatory guidelines, including Regulatory Guide 1.97; Revision 2.

Issue #15: Applicant has not demonstrated that it is prepared to prevent, discover, assess and mitigate the effects of steam erosion on components of the Perry Nuclear Power Plant that will be subjected to steam flow.

(2) In all other respects, Ohio Citizens for Responsible Energy's motion for leave to file contentions 21 through 26 is denied, but the part of the motion concerning contention 22, dealing with the containment concerns of J. R. Humphrey, is denied without prejudice to refiling.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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Directors' Decisions Under 10 CFR 2.206

DIRECTORS' DECISIONS

257.

Cite as 16 NRC 1473 (1982) DD-82-11

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of **Docket No. 50-244**
(10 CFR 2.206)

ROCHESTER GAS AND ELECTRIC CORPORATION
(R. E. Ginna Nuclear Power Plant)

October 8, 1982

Acting on a referral from the Commission of the petitioner's request for review of a partial denial (DD-82-3, 15 NRC 1348) of its earlier petition, the Director of Nuclear Reactor Regulation denies the petitioner's request for additional relief with respect to further operation of the R. E. Ginna Nuclear Power Plant.

TECHNICAL ISSUE DISCUSSED

Steam generator tube rupture events and repairs

DIRECTOR'S DECISION UNDER 10 CFR 2.206

I.

By a letter dated June 10, 1982, Ms. Ruth Caplan, Chair, Sierra Club National Energy Committee, requested that the Commission exercise its authority under 10 CFR Section 2.206(c) to review the partial denial (DD-82-3) by the Director of Nuclear Reactor Regulation of Ms. Caplan's petition dated March 11, 1982. In the March 11 petition Ms. Caplan requested that the Director of Nuclear Reactor Regulation initiate a review of matters pertaining to the ability of the licensee to

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safely operate the Ginna plant so as to protect public health and safety in light of the January 25, 1982, steam generator tube rupture (SGTR) event at the Ginna plant. The petitioner further requested that this review be incorporated into the review which was in progress by the staff at that time and that it should include, but need not be limited to, several specific areas discussed in the petition. Pending completion of this review the petitioner requested that the operating license for Ginna be suspended, or in the alternative, restart of the reactor not be permitted.

On May 22, 1982, I denied the portion of Ms. Caplan's request relating to suspension of operation. However, I granted the petitioner's request that the review include and consider specific areas detailed in the petition prior to restart of the Ginna plant. The documentation of this review is contained in the Safety Evaluation Report Related to the Restart of the R. E. Ginna Nuclear Power Plant, NUREG-0916 (May 1982). See Director's Decision, DD-82-3, 15 NRC 1348 (1982).

On July 21, 1982, the Commission declined to review the partial denial of Ms. Caplan's March 11 petition, but it referred Ms. Caplan's June 10, 1982, letter to the NRC staff for further consideration in accordance with 10 CFR 2.206. I have reviewed the information submitted by Ms. Caplan's June 10, 1982 letter and other information pertinent to the issues addressed therein, as indicated in the following discussion. The significant assertions of her petition are excerpted below.

II.

Petitioner's Assertion and Request

> A.1.a *Inlet nozzle to vessel weld.* Licensee analyzes the properties of the vessel nozzle, but fails to make any mention of the fact that "an indication in the inlet nozzle N2B to vessel *weld* that exceeded Code allowable limits was detected" during the in-service inspection performed February-March, 1979, and that the flaw was found to be 0.9 inch in length. (Source: NUREG-0569, "Evaluation of the Integrity of SEP Reactor Vessels," Appendix G, page 80, emphasis added.) At the same time, licensee takes pains to point out that past in-service inspection of the nozzle corners has shown them "to be free of unacceptable ultrasonic indications." (April 12th report at 6.4-3) Although the licensee discusses critical flaw depths for the nozzle, there is again no mention of the nozzle weld. Given that 0.75" is found to be sufficient for a flaw to initiate at the surface of the nozzle itself and to propagate in length and that a flaw deeper than 1.9" can propagate through the thickness of the nozzle, the Sierra Club finds it surprising that the 0.9" weld flaw is ignored.

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Response

The subject ultrasonic (UT) indication was detected in the B recirculation inlet nozzle-to-shell weld during the scheduled 10-year inservice inspection conducted in February 1979. Due to the configuration of the nozzle, scanning with the ASME Code required UT procedure (0° longitudinal wave and 45° and 60° angle beam sheer waves) did not reveal any indications. RG&E also examined the nozzle with a 15° refracted longitudinal wave and a 45° sheer wave in accordance with the methods and techniques described in Appendix I of Section XI of the ASME Code and detected the indication with only the 15° longitudinal wave. Based on the 50-50 DAC (Distance Amplitude Correction) sizing criterion, the reported indication has dimensions of 0.93 inch in through-wall depth and 5.27 inches in length which is larger than the code allowable standard specified in Table IWB-3512.1 of the Summer 1974 Addenda to the Section XI Code. However, when the beam spread correction at 50% DAC was employed, which was later reviewed and accepted by the staff, this near mid-thickness indication became a code acceptable flaw. This is the reason why the staff would not have expected this nozzle-to-shell weld indication to be mentioned in the licensee's April 12, 1982 report. This indication is believed to correspond to the entrapped slag observed in the fabrication radiograph and no significant growth existed in this weld based on the 1979 inspection. Furthermore, the pressure-temperature transient experienced during the January 25, 1982 tube rupture event did not result in the pressure-temperature changes exceeding those considered in the Design Transient Specifications. Therefore, reevaluation of this matter is not necessary to ensure the vessel integrity.

The stated critical flaw depth for crack initiation refers to an inside diameter surface crack and was determined to be 0.75″, assuming a large LOCA with injection water at 70°F. This assumed transient is much more severe than the Ginna event. Also, the peak thermal stresses during a cooldown transient are at the cooled surface, and the normal procedure is to postulate that the critical flaw is at this surface. The Ginna indication (not necessarily a crack) is deeper within the vessel wall and, hence, would not be subjected to these high thermal stresses. Thus, even if it were a crack as large as 0.93″, it would not be expected to initiate. Also, the metal temperature and hence its toughness at this internal location would be higher than at the surface which is another factor that would preclude crack growth. Further, the calculation referred to a postulated flaw in the irradiated beltline weld, whereas the flaw actually found was in the nozzle-to-shell weld, far from any radiation level that could cause significant reduction in fracture toughness.

A.1.b *Beltline weld analysis*. NUREG-0569 has determined that the beltline weld is the limiting reactor vessel material (*Ibid.* at 78). Yet licensee's analysis of the potential impact of the Ginna accident on the beltline weld is not sufficiently conservative. The "no warm prestressing" assumption, used for the perfect mixing case, is dropped when the imperfect mixing case is considered. Licensee asserts that, having used the conservative mixing assumption they should not also have to add the conservative assumption of "no warm prestressing."

They conclude: "For the no mixing case, using the modified Reg. Guide 1.99 trend curve and the warm prestressing principle, no flaw was found to initiate." (April 26th report at 4.1) This leaves the reader wondering whether a flaw would be found to initiate when warm prestressing is not assumed. Staff should have required that this question be answered.

A.2 *Staff analysis of B loop circulation*. The thermal shock analysis provided by the Task Force in NUREG-0909 and reiterated with some elaboration in NUREG-0916 at 3.5.2, is not, in our opinion, adequate to support staff's contention that flow reversal in the B loop prevented cold water as measured by the temperature sensor from entering the reactor vessel.

Staff has apparently made no attempt to model the hydrodynamics of the primary loop flow during the period of temperature drop. Such a model must not only account for the mass balance, but also for all relevant dynamics such as buoyant and viscous forces and turbulent mixing. Lacking such a model which integrates the various forces, staff's attempts at explanation of the system dynamics remain unconvincing. For instance, staff suggests that the steam generator is a heat source which causes loss of natural circulation flow in the B-loop, without mentioning any other factors which would effect flow.

Other potentially important dynamics are ignored by staff. For instance, staff fails to discuss the flow consequences of the RCS pressure falling below the S/G B pressure, resulting in reverse flow through the tube rupture during the PORV openings. Nor does staff attempt to analyze the dynamics by which water lost from the B loop through the burst tube and PORV is replaced in the system. The question of stratified flow with some cold safety injection water being drawn into the reactor is certainly not answered by staff's vague reference to use of EPRI data. (NUREG-0916 at 3-15)

Staff asserts that even if cold water had entered the reactor, fracture mechanics analysis indicates that there would be no crack initiation. We

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are given almost no information about this analysis; however, we are told that the temperature used was that measured by the sensor in the cold leg of the B loop. (*Ibid*. at 3-15) This is portrayed as a worst case analysis, despite staff's recognition on the previous page that the temperature entering the reactor could be 10° less than the measured temperature.

Response

The staff is currently performing an analysis of the R. E. Ginna steam generator tube rupture event of January 25, 1982. The RETRAN 02[1] computer program is being used to perform this analysis. Results of this analysis are expected to be completed by the end of the year. We believe this analysis will support the conclusions of NUREG-0916 concerning pressurized thermal shock.

In support of the staff's findings, the following additional information is provided concerning the analyses performed in NUREG-0916:

1. *Temperature History Effect*

   Due to the thickness and thermal conductivity of the vessel wall, temperature changes of the coolant at the vessel surface propagate more slowly in the vessel wall. The thermal time constant of the wall is on the order of 30 minutes.[2] An example of the temperature distribution in a vessel wall as a function of time, for the specified thermal transient, is shown in the attached figure. Temperature fluctuations in the water, the period of which is a few minutes or less (for example, less than the vessel wall thermal time constant), have little effect on the temperature distribution in the wall, and it is possible to use the average surface temperature curve in fracture mechanics analyses. The Ginna SGTR event falls into this category. The effect of the vessel inner wall heat transfer coefficient is the greatest in the most rapidly changing parts of a transient. Note that for the case illustrated, the metal surface temperature as a function of time can be closely approximated by $T(\text{wall}) = 550 - 240(1 - \exp(-0.45{*}t))$, if a vessel inner wall heat transfer coefficient of infinity is used. Our studies to date indicate that the most critical factor with respect to pressurized thermal shock considerations is the final temperature of the water. Although our best judgment at this time is that B loop flow was in the direction of the B steam generator during the time the PORV was stuck open, we have conservatively assumed that the B loop flow was towards the vessel for

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[1] "RETRAN 02, A program for Transient Thermal-Hydraulic Analysis of Complex Fluid Flow Systems," EPRI NP-1850-CCM, May 1982.

[2] The time it takes for the bulk (volume average) wall temperature to reach 63% of its final value due to a step change in temperature at the vessel surface.

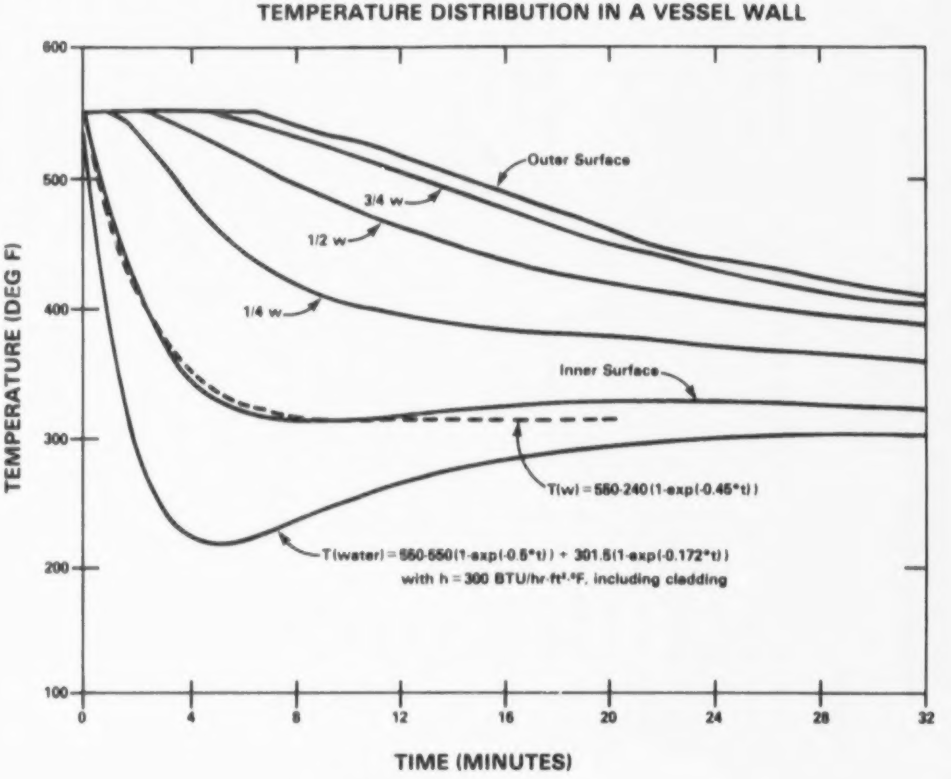
TEMPERATURE DISTRIBUTION IN A VESSEL WALL
TEMPERATURE (DEG F)
600
500
400
300
200
100
0
4
8
12
16
20
24
28
32
TIME (MINUTES)
Outer Surface
3/4 w
1/2 w
1/4 w
Inner Surface
T(w) = 550-240(1-exp(-0.45*t))
T(water) = 550-550(1-exp(-0.5*t)) + 301.5(1-exp(-0.172*t))
with h = 300 BTU/hr·ft²·°F, including cladding

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FIGURE 1

the entire duration of the transient. In this case, the appropriate thermal characteristic (vessel downcomer coolant temperature versus time) for the Ginna SGTR event is that specified as Case 1, from Figure 2.4 of NUREG-0916, with uncertainties associated with instrument errors and mixing of the cold safety injection water. Case 2, from Figure 2.4 of NUREG-0916 is a conservative lower bound of the B loop coolant temperature designed to encompass the short duration coolant temperature decrease associated with the open PORV. This lower bound is equivalent to adding a total uncertainty of over 60°F to the Case 1 figure. Thus, the Case 2 temperature characteristic bounds the estimated uncertainties in the downcomer temperature (10°F to 20°F for mixing plus 15°F to 25°F for instrument errors). The conclusion that no crack initiation occurred during the SGTR event, based on the Case 2 fracture mechanics analysis, is, therefore, confirmed.

2. *Detailed Fracture Mechanics Analysis*
A specific, detailed fracture mechanics analysis[3] was performed by Oak Ridge National Laboratories (ORNL) for the R. E. Ginna STGR event. The plant-measured data for pressure and the B loop temperature were used and no credit was taken for warm prestressing. The results of this analysis showed that, for a critical flaw size of 0.91 inch, crack extension and arrest would still occur for a vessel RT_{NDT} (nil ductility transition reference temperature) value of 378°F. Based on the conservatively estimated RT_{NDT} value of 225°F for the Ginna vessel, there was considerable margin available at the time of the event. Downcomer fluid temperatures of 100°F less than the B loop measured fluid temperatures would not result in pressurized thermal shock.

Petitioner's Assertion and Request

B. *Safety valve*. The Sierra Club considers staff response regarding the safety significance of the steam generator safety valve malfunction and the lack of any proposed corrective action to be an unacceptable response to the Club petition #11b. We wish to bring this concern to the Commission's attention.

The Task Force, appointed by the Commission, determined that the safety valve opened and closed five times. Staff in NUREG-0916 notes the Task Force findings regarding the malfunction of the valve in the following passage:

---

[3] "Fracture-Mechanics Analysis for Several PWR Recorded OCA Transients," R. D. Cheverton, D. G. Ball, S. K. Iskander, ORNL, July 20, 1982, Revised 7/27/82.

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> "NUREG-0909 also notes that the valve opened and closed at generally decreasing pressures and discussed a possible reason for the decreasing closing pressures; the possibility of some steam leakage after closing the first time, and water leakage estimated at 100 gpm after the last closing. The NUREG attributed the water leakage to the likelihood of failure to fully reseat after the last closing until 50 minutes later when the valve apparently stopped leaking." (NUREG 0916 at 6-11)

Despite this release of approximately 500 gallons of cooling water contaminated via the tube rupture and released directly to the environment, the staff concludes "that the valve behavior was entirely within its design basis," (*Ibid* at 6-12) and that "The performance of the steam generator safety valve that opened was satisfactory." (*Ibid.* at 6-14). The Sierra Club is shocked by staff's conclusions. When the safety valve leaks or sticks open, there is no way operators can close the valve manually. Nor can a block valve be closed. During a SGTR accident, the safety valve is a direct path for loss of radioactive steam or water to the environment. The potential for exceeding Part 100 release limits during a design basis SGTR accident is discussed in the next section. Given this scenario, staff's conclusion that the safety valve is acceptable does not serve to increase citizen confidence in the nuclear industry's ability to protect public health and safety. We are not reassured by staff's decision to give the licensee 6 months in which to review its procedures for a tube rupture with failed SG safety or relief valve. (*Ibid.* at 4.1.12)

If the safety valve malfunctioned while still meeting the design basis specifications, then the specifications are clearly inadequate. The Ginna reactor should not be allowed to operate without an improved safety valve.

C. *Iodine release.* Staff recognizes, as a result of the Ginna accident, that the potential exists for doses [of iodine to be released] exceeding Part 100 Guidelines for a design-basis SGTR accident." (*Ibid.* at 8-1) As recently as June 25, 1981, staff's analysis of such an accident contained in "Systematic Evaluate [sic] Program Evaluation of a Steam Generator Tube Rupture Accident at Ginna" had not considered the possibility of substantial amounts of water and steam being released through the safety valve. The inability of staff to model possible accident parameters accurately *in advance* of an accident lays open to question the basis on which regulations are promulgated.

While we commend staff's caution in reducing the spiking and equilibrium concentration limits for iodine in the primary coolant, we note that staff is willing to remove these stricter standards if licensee can demonstrate that steam generator flooding will not occur. (*Ibid.* at 8.1) Yet the steam generator did flood with water when it was not expected to do so. At

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the very least there should be a "lesson learned" from the Ginna accident that such flooding should be part of a design basis SGTR accident.

Response

Accurate analysis of a steam generator tube rupture is complex because it involves thermohydraulic transients in the primary and secondary coolant systems that affect each other, operator actions necessary to mitigate the consequences of the accident, and a variety of ways in which the accident can evolve. It is only necessary that such accidents be analyzed conservatively. Because of this complexity, the most accurate prediction that the staff can make "in advance" is that no two steam generator tube rupture (STGR) accidents are likely to be the same. The existing SGTR accident experience supports this.

For the purposes of analyzing a design basis SGTR (like the June 25, 1981 staff analysis for Ginna), the staff makes simplifying but conservative assumptions as to the course of the accident and the pathways for the release of radioactivity. The assumptions are based on engineering judgment as to what the worst credible accident would be. The radiological consequences calculated using these assumptions, and the methodology described in Standard Review Plan (SRP) 15.6.3, "Radiological Consequences of Steam Generator Tube Rupture Accidents," are judged by the staff to be conservative, in the sense that the best estimate of doses (and doses from actual accidents) would be far less. This is because the values assumed for many accident parameters, to which the calculated dose is directly proportional, are far higher than the most probable values. Examples are iodine concentrations in the reactor coolant and the atmospheric dispersion coefficient. However, there may be some aspects of the longer-term evolution of the thermohydraulic transients that have received little attention by the staff. In particular, the type of and timing of operator actions to mitigate the accident after half an hour (or an hour) have not been evaluated in depth by the staff. These operator actions can determine, among other things, whether or not the steam generators will overfill. Also the staff currently assumes that the atmospheric dump valve and safety valves of the affected steam generator work as designed. However, during the Ginna event, the safety valve opened at successively lower pressures, finally failing to fully reseat. Although this affected the course of the incident by prolonging the leakage, the safety valve performed its design function of providing over-pressure protection of the steam generator.

The overall effect of these operator actions and equipment malfunctions on the predicted accident behavior is still under study. However, after the Ginna accident the staff re-evaluated offsite doses for a future postulated SGTR, assuming essentially no mitigative actions by the operator to stop primary-to-secondary leakage (NUREG-0916 Section 8). The results of the evaluation showed that with the new iodine concentration limits required by the staff and discussed in NUREG-0916, doses would be less than 10 CFR Part 100 guidelines, even if there was extended primary-to-secondary leakage and long-term overfill of the steam generator. It is reasonable to assume that some action to mitigate leakage would be given high priority following an actual accident, particularly if sampling showed that the reactor coolant iodine levels were as high as those assumed by the staff when calculating doses. In every past SGTR accident, the operators have taken action to reduce pressure and control leakage, even though these actions resulted in leakage beyond the times typically assumed for a design basis SGTR. The staff's assumption of *no* operator action is very conservative, yet it bounds the worst credible consequences, and is necessary to assure the public health and safety until the staff and licensee complete a more in-depth analysis. The staff required that the licensee re-analyze the SGTR for Ginna, giving particular attention to long-term mitigation of the accident, operator actions, and equipment malfunctions not previously examined.

The staff will carefully evaluate the re-analysis, and will not grant an increase in coolant iodine concentration technical specification limits unless the new limits and predicted plant behavior result in offsite doses less than 10 CFR Part 100 guidelines.

Petitioner's Assertion and Request

> C. . . . We note that staff again avoids dealing with the fact that the safety valve is not designed to handle water, or to be cycled open and closed. Staff suggests that the steam generator PORV is better suited for cycling and so "*may* be better to use." (*Ibid.* at 8-3) However, staff concedes earlier in its discussion that the relief valve is also subject to malfunction. They state:
>
> > "Two-phase flow through the *relief* or safety valves may contribute to valve degradation and possible failures to reseat. This can contribute to the radiological consequences by providing a prolonged pathway to the environment." (*Ibid.* at 8.1, emphasis added.)
>
> Thus, simply changing the emergency operator guidelines to ensure that the block valve is not closed incorrectly will not remedy the problem.

Response

The ability of the safety or relief valves to pass water or a two phase mixture without degrading their performance is important in the mitigation of a SGTR if the

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steam generator water level becomes excessive. During the Ginna event, continued safety injection led to overfilling of the steam generator, safety valve lifting, and subsequent maloperation. As NUREG-0916 states, degraded relief or safety valve performance may contribute to offsite consequences by continuing releases.

The damaged steam generator safety valve opened five times (NUREG-0916, pp. 6-10) at successively lower pressures. The licensee asserted that the valve performance was not unexpected, and that variation in lifting pressure and blowdown may be expected due to heating of the valve internals and spring relaxation with repeated openings. However, the failing to fully reseat and the valve degradation that the licensee reported may have been due to the valve being subjected to two-phase and liquid releases. It is this latter performance, in particular, that has the most direct impact on the SGTR accident.

A number of recommendations for both the industry and the staff are in the final stages of agency review and value/impact analysis. One of the tasks proposed for the agency is to assess the probability and consequences of steam generator overfill as a result of operator errors or equipment malfunctions during a SGTR accident. As a part of this task, the staff will assess the need for qualifying the safety and relief valves for water and two-phase releases. This assessment will factor in the results of the overfill analysis, the offsite consequences as a result of a various operator errors, and the recent pressurizer PORV and safety valve testing program conducted by EPRI.

Petitioner's Assertion and Request

> C. . . . Staff has approved other changes which relate to termination of the safety injection. We are concerned that these changes may have ramifications for core cooling. We are particularly concerned about the following note to be added after STEP 3.15.3:
>
> > "Termination of SI with suspected voids in the upper RV head is allowed when natural circulation is verified." (*Ibid.* at 8.1)
>
> The Ginna accident has demonstrated how difficult it can be to verify natural circulation. We find no analysis of the consequences of terminating SI with a vessel void, if operators make an error in verifying natural circulation. Nor do we find any analysis of possible adverse consequences of adding STEP 3.20.3 which requires that operators "Block SI before the faulted S/G drops below 550 psig."

Response

The Ginna event did not demonstrate any difficulty in verifying natural circulation. Following manual trip of the reactor coolant pumps, the operators, as instructed by plant procedure 0-8, Revision 2, "Natural Circulation in the RCS," confirmed that natural circulation had been established by observing various plant parameters, as:

1. Loop "A" T (differential temperature) less than full power T.
2. Core exit thermocouples subcooled and constant or decreasing in temperature.
3. A-steam generator level in the narrow range, as soon as the level recovered from the reactor trip.
4. Auxiliary feed flow to A-steam generator.

It is highly unlikely that, given the above plant parameters, the operators can make an error in verifying natural circulation. Nevertheless, in the unlikely event that natural circulation is not established, termination of safety injection (SI) with a vessel void would result in a gradual repressurization of the reactor coolant system. The repressurization of the reactor coolant system and reversal in direction of the four plant parameters listed above is an indication to the operators that natural circulation has not been achieved, and the procedures direct the operators to alternative methods for depressurizing and cooling the primary system.

In step 3.20.3 of procedure E-1.4, the operators are instructed to "block SI before the faulted S/G drops below 550 psig," in order to preclude inadvertent actuation of SI by the faulted S/G low pressure SI actuation set-point. In the event, however, of an actual need for SI, following the block of the faulted S/G actuation variables, the redundant primary system variables or the intact S/G pressure variables will independently initiate SI.

Petitioner's Assertion and Request

> C. . . . Staff admits that there has been "incomplete evaluation of the effects of changes to operator guidelines," (*Ibid.*) which is one reason the iodine limits are being lowered. The Sierra Club urges the Commission to reconsider the wisdom of allowing Ginna to restart when opereting guidelines have been changed without complete evaluation of the safety repurcussions [sic] of these changes.

Response

The staff's evaluation of the procedural improvements made by the licensee in response to the SGTR are contained in Section 4 of NUREG-0916. Based on the licensee's response to the event and the subsequent program for further improvements, the staff concluded that adequate protection is provided for steam generator tube rupture events. The licensee committed, at that time, to study further the areas of pump trip and restart, cooldown of a faulted steam-generator, coping with a

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reactor vessel steam bubble, and additional natural circulation cooldown guidance. The staff will review these studies when they are submitted and any further modifications to Ginna's procedures resulting from these studies will be included in the review.

As stated previously, after the Ginna accident the staff re-evaluated offsite doses for a future postulated SGTR, assuming essentially no mitigative actions by the operator to stop primary-to-secondary leakage. The results of the evaluation showed that with the new iodine concentration limits recommended by the staff, doses would be less than 10 CFR Part 100 guidelines, even if there was extended primary-to-secondary leakage and long-term overfill of the steam generator. It is reasonable to assume that some action to mitigate leakage would be given high priority following an actual accident, particularly if sampling showed that the reactor coolant iodine levels were as high as those assumed by the staff when calculating doses. The staff's assumption of *no* operator action is very conservative, yet it bounds the worst credible consequences, and will assure the public health and safety until the staff and licensee complete a more in-depth analysis.

Petitioner's Assertion and Request

> D. *Steam Generator Tubes.* In response to concerns raised in Sierra Club's petition at #2a, b, c and #3 regarding in-service inspection standards and specifications for tube rejection, staff simply renumerates the current standards and RGPE procedures. There is no recognition by staff that the inability to anticipate the January 25th tube burst, despite recurrent problems in wedge area #4 and eddy current indication in April, 1981, for the tube that later burst, should be a warning that the standards are not adequate. The Sierra Club is concerned that staff has avoided dealing with the implications of the tube burst and urges the Commission to review the adequacy of these standards.

Response

The adequacy of the eddy current test procedures, data evaluation, and calibration standards were reviewed by the NRC staff and by an expert consultant to the staff who was present at the Ginna site. The results of this review and our conclusions are described in detail in Section 5.2.4.1, 5.3.1.2, 5.4.3 of the staff's SER (NUREG-0916).

The immediate cause of the tube rupture occurrence was excessive tube wall penetration by a smooth fretting type wear flaw which led to a pressure burst of the tube. Such a smooth or gradually tapered flaw may produce little or no signal on the differential channels depending on the degree of smoothness or taper. This type

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of flaw will produce a detectable signal on the absolute data channels. However, the staff believes that special calibration standards with simulated wear defects should be employed in addition to the standards required by the ASME Code to ensure a conservative interpretation of signals produced by such defects and is including these standards in its generic review of the Ginna event.

Calibration standards with simulated wear flaws had not been used during the previous inspection in April 1981. The tube which later ruptured in January 1982 had not exhibited a differential signal in April 1981, but did exhibit an absolute signal which was interpretable as less than a 20% through-wall penetration using ASME Code calibration standards. Given the present knowledge that the tube was degraded by a smooth fretting type wear flaw, the less than 20% interpretation of the April 1981 signal is likely to be non-conservative. This signal is interpretable as a slightly greater than 40% through-wall indication using calibration standards with a simulated wear flaw. Thus, we expect that this tube would have been plugged in April 1981 had this standard been used to evaluate the signal on the absolute channel.

The eddy current inspections conducted subsequent to the rupture occurrence employed both differential and absolute mode inspection. Wear calibration standards were also employed during this inspection. We believe these inspections were adequate to detect any tubes with the type of flaw which caused the tube rupture.

Regarding the 40% plugging limit, the limit has been developed to assure that there is sufficient remaining wall thickness to preclude rupture over the full range of normal and postulated accident conditions. This limit makes allowance for approximately 10% additional through-wall penetration prior to performing the next inspection of the tube. This allowance is generally adequate based upon operating experience. However, due to the presence of loose parts, the degradation rate for the tube which ruptured was apparently much higher than what is allowed for in the plugging limit. Thus, it is necessary to eliminate the conditions for continuing the degradation mechanisms which led to the rupture, in addition to performing eddy current inspections and plugging those tubes that exceed the plugging limit. This was the objective of the repair program conducted at Ginna following the rupture occurrence. The repair program (discussed in Section 5.5 of the staff's SER) included the removal of all foreign objects and loose parts and the removal of previously plugged tubes which could potentially cause damage to adjacent tubes. Thus, we do not expect further progression of the impact and wear damage from foreign objects which had been occurring for several years up to January 25, 1982.

Petitioner's Assertion and Request

E. *PORV.* The Sierra Club raised the concern that the PORV is not required to be safety grade in its petition at #7 and asked for staff review in

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> light of the Ginna accident and the failure of the PORV. Staff has responded that a generic study is underway. (Denton response of May 22, 15 NRC 1351) The fact that a specific cause has been determined for the Ginna PORV failure in no way obviates the importance of making the PORV safety grade. How many accidents involving a malfunction of the PORV need to take place before the staff determines that these valves need to be upgraded? This question is ripe for Commission consideration.

Response

It is uncertain whether upgrading the PORV to safety grade will provide the desired improvement in the ability of a PORV to reclose following an automatic or manual opening. Operability tests conducted by EPRI on PORVs, similar to those conducted for safety valves which are safety grade, have demonstrated acceptable performance. However, some failures to reclose have continued to occur in power plants.

Although PORV failures are undesirable from an operational standpoint, it is not yet clear whether such failures pose an unacceptable risk to public health and safety. For example, if PORV failures are not considered to increase the probability of core melt, then upgrading may not be warranted. The staff study acknowledged in the May 22 Director's Decision is nearing completion and the staff's recommendations will be presented when the study is completed.

III.

> Ms. Caplan urges, "Where generic investigations are not already underway, we hope that the Commission will institute such proceedings so that the "lessons learned" from the Ginna accident will not be lost."

The Commission staff has initiated a study of the matters affecting steam generator tube degradation and steam generator tube rupture (SGTR) events which may have generic applications. The scope of the information being considered for these studies includes the Ginna STGR as well as three previous domestic SGTRs, the results of ongoing staff studies regarding tube degradation, and recent steam generator operating experiences, including foreign experiences, where available. Results of this study may fall into one of three areas: (1) they could be applicable to already ongoing staff generic efforts and the lessons learned from the study are therefore planned to be factored into those ongoing studies, (2) the results could define areas which require further evaluation by the staff prior to determining the actions needed to respond to the subject, and (3) the results might be identified as candidates for generic application to all pressurized water reactors and are therefore being subjected to value/impact analyses and further review by the staff to determine which candidates will be applied as generic requirements. The process for this latter category is currently under way and is expected to be completed in late 1982.

For the reasons and under the conditions described in the staff's restart SER (NUREG-0916), the R. E. Ginna plant can be operated without undue risk to public health and safety. Although additional analyses and studies of such issues as pressurized thermal shock, steam generator degradation and tube rupture transients are under way, Ms. Caplan's letter provides no new information that would lead the staff to alter its conclusions in NUREG-0916 or that would require suspension of plant operation pending the completion of ongoing and planned studies. Therefore, I have determined that no adequate basis exists for ordering the suspension of the operating license for the R. E. Ginna Nuclear Power Plant. Consequently, Ms. Caplan's request is denied.

A copy of this decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the decision will become the final action of the Commission twenty-five (25) days after issuance, unless the Commission, on its own motion, institutes review of the decision within that time.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 8th day of October, 1982.

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NUREG-0750
Vol. 16, No. 5
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COMPLETED ORIGINAL

NUCLEAR REGULATORY COMMISSION ISSUANCES

November 1982

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NUCLEAR REGULATORY COMMISSION ISSUANCES

November 1982

This report includes the issuances received during the specified period from the Commission (CLI), the Atomic Safety and Licensing Appeal Boards (ALAB), the Atomic Safety and Licensing Boards (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions For Rulemaking (DPRM).

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

U.S. NUCLEAR REGULATORY COMMISSION

Prepared by the Division of Technical Information and Document Control,
Office of Administration, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555
(301/492-8925).

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-358
(Construction Permit
No. CPPR-88)
(EA 82-129)

CINCINNATI GAS & ELECTRIC
COMPANY
(William H. Zimmer Nuclear
Power Station)

November 12, 1982

The Commission issues an immediately effective order suspending licensee's safety-related construction activities, including rework of previously-identified deficient construction. The Commission also orders licensee to show cause why such construction activities should not remain suspended until licensee has taken certain specified action toward providing reasonable assurance that future construction activities, including correction of existing deficiencies, will be conducted in accordance with the quality assurance criteria of 10 CFR Part 50, Appendix B, and other Commission requirements.

ORDER TO SHOW CAUSE AND ORDER IMMEDIATELY SUSPENDING CONSTRUCTION

I.

The Cincinnati Gas and Electric Company (CG&E) holds Construction Permit No. CPPR-88 which was issued by the Commission in 1972. The permit authorizes the construction of the William H. Zimmer Nuclear Power Station Unit 1, a boiling water reactor to be used for the commercial generation of electric power. The Zimmer plant is located on the licensee's site in Moscow, Ohio.

II.

A. Initial Identification of QA Problems

In early 1981 the NRC conducted an investigation into allegations made by present and former Zimmer site employees and by the Government Accountability Project. The NRC investigation revealed a widespread breakdown in CG&E's management of the Zimmer project as evidenced by numerous examples of noncompliance with twelve of the eighteen quality assurance criteria of Appendix B to 10 CFR Part 50. Consequently, CG&E paid a civil penalty of $200,000 for the failure to implement an acceptable quality assurance program, false quality assurance documents, and intimidation and harassment of quality control inspectors. (See Notice of Violation and Proposed Imposition of Civil Penalties, dated November 24, 1981 and Investigation Report No. 50-358/81-13.) In addition CG&E agreed to take actions to correct identified QA failures and prevent their recurrence and to determine quality of completed construction work.

1. Actions to Correct Identified QA Failures and Prevent Recurrence

A meeting was conducted by Region III on March 31, 1981, and the utility agreed to implement ten actions to correct quality assurance failures identified during the January-March 1981 investigation and to preclude their recurrence. These actions included: (1) increasing the size and technical expertise of the CG&E QA organization; (2) taking action to assure independence and separation of the QA/QC function performed by Kaiser from the construction function; (3) conducting 100% reinspections of the quality control (QC) inspections performed after that date by Kaiser and other contractors; (4) reviewing for adequacy, and revising as appropriate, all QC inspection procedures; (5) training QA/QC personnel on new and revised procedures; (6) reviewing for adequacy, and revising as appropriate, the procedures governing the identification, reporting, and resolution of deviations from codes and Final Safety Analysis Report (FSAR) statements; (7) reviewing for adequacy the procedures governing nonconformance reporting and justifying the disposition of each voided nonconformance report; (8) establishing an adequate program for control of QA and QC records; (9) performing a 100% review of all future surveillance and nonconformance reports written by contractor personnel; and (10) reviewing and revising the CG&E audit program so that it included technical audits of construction work and more comprehensive and effective programmatic audits. These commitments were confirmed in an Immediate Action Letter to the licensee on April 8, 1981.

2. *Actions to Determine Quality of Completed Construction Work*

Following the identification in 1981 of significant quality assurance problems and related management breakdowns, CG&E agreed to establish a comprehensive program to determine the quality of the completed construction work. The Quality Confirmation Program (QCP) was submitted to the NRC by the licensee on August 21, 1981. The QCP addressed problems identified by the investigation in the following areas: (1) structural steel; (2) weld quality; (3) traceability of heat numbers on piping; (4) socket weld fitup; (5) radiographs; (6) electrical cable separation; (7) nonconformance reports; (8) design control and verification; (9) design document changes; (10) subcontractor QA programs; and (11) audits.

3. *Results of Actions Taken by the Licensee to Determine the Quality of Completed Construction Work*

Many construction deficiencies have been identified by the licensee during the conduct of the QCP and other quality reviews and reported to the NRC pursuant to 10 CFR 50.55(e) which could have been prevented or identified in a timely manner by the licensee and its contractors had there been a properly managed QA program. Major construction deficiencies identified to date by the quality reviews are listed in order of identification and include the following:

- Welds performed using an unqualified welding procedure for welds greater than 0.864 inch.
- Unauthorized stamping of fittings and use of "high-stress" stamps.
- ASME structural weld and welder qualification deficiencies.
- Welds performed and welders not qualified for weld thickness range per ASME requirements.

- Approximately 2400 feet of small bore piping identified with questionable heat treatment.
- Welder qualifications with a substantial number of documentation discrepancies.
- Carbon steel weld rod may have been used for a portion of several stainless steel recirculation line welds.
- Electrical cable tray installation and inspection deficiencies.
- Hangers installed for the control rod drive system are of indeterminate quality.
- Both weld and radiograph quality deficiencies for sacrificial shield welds and radiograph deficiencies identified for the containment monorail and the ventilation stack.
- Deficiencies in the H. J. Kaiser procurement program for structural steel and other materials.
- Inadequate design control by Sargent & Lundy (architect-engineer) for electrical separation.
- Inadequate weld preparation prior to radiography (ripples not removed) which caused masking of discontinuities in some welds.
- Reactor control, reactor protection, and neutron monitoring panels, including field-installed wiring, do not, in some cases, conform to design drawings with regard to cable separation.
- Inadequate engagement of "gamma plugs" in large-bore piping and lack of heat number traceability of the "gamma plugs." (During radiography of a pipe weld, a gamma source is sometimes inserted through a small hole in the side of the pipe. After radiography the hole is plugged to provide a pressure boundary.)
- Inadequate inspection program and installation procedures for "Nelson stud" installation for cable tray hangers.
- Concrete and steel coating program not in accordance with the QA Program and the Sargent & Lundy specification requirements.
- Design changes made to the Fire Protection System piping in the cable spreading room in 1979 were inadequately controlled.
- The Sargent & Lundy (architect-engineer) dynamic stress analysis of small-bore piping is questionable.
- Cable separation problem with regard to division separation between non-essential cables being bundled with essential cables of different divisions.
- Pipe support installation procedures did not contain seismic clearance criteria between pipe supports and cable trays or conduit and associated supports as required by the specification.

These deficiencies represent those which the staff considers most significant. There were additional 10 CFR 50.55(e) reports made by the licensee and the licensee has identified a large number of nonconformances (which could reflect construction or other types of deficiencies). As of September 30, 1982 the licensee's continuing quality confirmation program reviews had identified approximately 4,200 nonconformances of which about 800 have been "dispositioned," *i.e.*, the licensee had made a determination as to resolution. (Inspection Report No. 50-358/82-12, report pending.) The large number of nonconformance reports and the significance of the matters being identified corroborate the staff's 1981 finding of significant breakdown in the licensee's quality assurance program.

B. Findings Subsequent to Licensee Actions Taken to Correct QA Failures and Prevent Recurrence

Since the Immediate Action Letter was issued on April 8, 1981 and quality assurance and management deficiencies were brought to the attention of the licensee, hardware and programmatic QA/QC problems have been identified by the NRC and the National Board of Boiler and Pressure Vessel Inspectors. These problems are discussed in the following paragraphs and indicate the licensee and the constructor are still having difficulty implementing satisfactory QA/QC programs:

> During an inspection conducted the latter part of 1981 and the early part of 1982 (Inspection Report No. 50-358/82-01, issued on June 24, 1982), three items of noncompliance were identified. The findings concerned (1) the failure to clearly establish and document the authorities and duties of all QA Department personnel, (2) the failure to provide adequate certification of qualifications of all QA Department personnel, and (3) the failure to provide adequate procedures. The licensee failed to adequately address the provisions of Regulatory Guide 1.58 (ANSI N45.2.6-1978) concerning personnel in the QA Department. Additionally, inadequately qualified personnel were reviewing and approving quality procedures controlling electrical activities, which contained deficiencies.
>
> Furthermore, as a result of the licensee reviews it was revealed that some weld inspectors involved in the QCP Task I, Structural Steel, were not adequately certified and the task was stopped. The task was restarted following upgrade of the inspectors through training provided by additional certified weld inspectors.
>
> During an inspection conducted in March and April 1982 (Inspection Report No. 50-358/82-05, issued on July 1, 1982) two items of noncompliance were identified. The findings concerned the lack of implementation and timeliness of corrective actions and the failure to adequately review and document potentially reportable matters.
>
> During an inspection conducted in April, May, and June of 1982 (Inspection Report No. 50-358/82-06, issued on November 2, 1982) two

items of noncompliance were identified. The findings concerned (1) the performance of quality activities required of the welding engineers by inadequately qualified clerks and (2) the failure to perform required calibrations during a critical quality activity, Induction Heating Stress Improvement (IHSI) program.

A recent inspection conducted during June and July of 1982 (Inspection Report No. 50-358/82-10, report pending) identified a number of significant concerns. These concerns were discussed with the licensee on July 9, July 15, August 15, and October 19, 1982. Four significant items of concern (potential items of noncompliance) were identified: (1) the inadequate control and documentation of welder qualifications; (2) the failure to take corrective actions following the identification of inadequate records to support welder qualifications; (3) the unauthorized correction, supplementation, and alteration of quality records; and (4) the failure to follow procedures controlling weld filler metal control, logging and control of requests for information/evaluation, and imposition of reporting requirements on contractors. The NRC findings concerning welder qualifications resulted in the requalification of approximately 100 active onsite welders and the need for the licensee to develop a program to evaluate the previous work of the welders whose qualifications were not adequately documented.

An inspection was conducted following notification of the Region III Office that a CG&E Stop Work Order (SWO) had been initiated on August 5, 1982, pertaining to Catalytic, Inc. (CI) activities in the area of the control rod drive system hangers and supports. CI is a contractor of the licensee performing construction work including rework activities identified by the QCP program. During this inspection conducted during August and September of 1982 (Inspection Report No. 50-358/82-13, report pending), significant concerns were identified regarding the implementation of CG&E's quality assurance program and its management program established to control and monitor the activities of Catalytic, Inc. The concerns involved the areas of (1) the description of organization and functional interfaces, (2) training of CI personnel, (3) design control measures, (4) procedure content and implementation, (5) document control, (6) inspection and surveillance activities, (7) nonconforming conditions, (8) corrective actions, (9) records, and (10) audits. The findings were discussed with the licensee on August 12, September 10 and 17, and October 19, 1982.

As a result of the inspection findings and subsequent discussions with the licensee, Stop Work Orders were issued by the licensee, stopping all essential work by CI on October 11, 1982, pending resolution of the programmatic problems identified by the NRC and licensee reviews.

The licensee has initiated Stop Work Orders in addition to those affecting CI due to inadequate quality assurance in the areas of application of coatings (October 12, 1982), electrical cable installation (October 12, 1982), and special process procedures (November 1, 1982). The Stop Work Orders involve ongoing activities. The November 1, 1982 Stop Work Order involved procedures not meeting requirements notwithstanding that the procedures had been specifically reviewed by CG&E for adequacy subsequent to the issuance of the April 8, 1981 Immediate Action Letter.

Additionally, during the week of October 10, 1982, the Authorized Nuclear Inspector (ANI) for the N-stamp holder (H. J. Kaiser) recalled ASME work packages then being used in the field because of the performance of ASME code work (hanger attachment removal and piping cutouts) was outside the approved QA Program procedures. The ASME code work was being controlled and performed utilizing an H. J. Kaiser administrative memo which bypassed the ANI's required involvement in the code activities. The NRC was apprised of the required corrective actions during a meeting involving CG&E and H. J. Kaiser on October 15, 1982. The corrective actions taken and planned were considered acceptable by the Authorized Nuclear Inspector.

The National Board of Boiler and Pressure Vessel Inspectors, at the request of the State of Ohio, have been onsite since March 1, 1982. The National Board has issued three interim reports documenting findings regarding ASME code activities. The National Board findings include deficiencies in the following areas regarding on-going ASME code activities: design control, procurement, procedures, special processes, nonconforming conditions, and corrective actions. The findings are generally consistent with past and present NRC findings.

C. Rework Activities

As a result of the information obtained from the licensee's reviews of plant quality, the licensee is proceeding, prior to completion of the relevant QCP tasks, to initiate rework activities. A major example of rework activities is the area of structural steel welding. The reinspection and rework of structural steel welds located in a number of areas of the plant have been in process for a number of months. Approximately 70 percent of the structural welds are being reworked to make the welds acceptable. In the case of these welds, rework is being undertaken prior to the completion of the quality reviews to determine the acceptability of all structural steel welds and beam/hanger materials. The rework of these welds prematurely may result in the addition of new weld material over unacceptable weld material or beam/hanger materials. Following completion of the quality reviews unacceptable areas may require additional rework activities. This approach to rework activities indicates a lack of a comprehensive management program to address rework activities and the safety impact of those activities on the facility.

III.

The foregoing information indicates that: 1) the Zimmer facility has been constructed without an adequate quality assurance (QA) program to govern construction and to monitor its quality, resulting in the construction of a facility which currently is of indeterminate quality; 2) substantial efforts are under way to determine the quality of past construction activities, and numerous construction deficiencies have been identified and are continuing to be identified such that both reanalysis and rework will be required to bring the facility into conformance with the application and regulatory standards on the basis of which the construction permit was originally issued; and 3) rework of deficiencies identified by the Quality Confirmation Program (QCP) has been undertaken prior to completion of other relevant QCP tasks and other reviews, resulting in the potential for additional reworking of the same item if further deficiencies are found, as has been the case, by the quality reviews. Consequently, the NRC presently lacks reasonable assurance that the Zimmer plant is being constructed in conformance with the terms of its construction permit and 10 CFR Part 50, Appendix B, and that there is adequate management control over the Zimmer project to ensure that NRC requirements are being met.

The verification of the facility's quality and appropriate actions to correct deficiencies in construction are of utmost importance to the public health and safety should the licensee receive a license to operate the facility. Moreover, the licensee must be in a position to assure that its construction activities have been properly carried out in accordance with Commission requirements, as the Commission inspectors are not able to personally verify every individual aspect of construction that may impact on safety. In view of the importance of construction verification and corrective actions to safety and the past pattern of quality assurance deficiencies, the Commission has concluded that safety-related construction, including rework activities, should be suspended until there is reasonable assurance that future construction activities will be appropriately managed to assure that rework activities and all other construction activities will be conducted in accordance with 10 CFR Part 50, Appendix B, and other Commission requirements. The Commission has further determined that, in light of the foregoing considerations, the public health, safety and interest require suspension of construction, effective immediately pending further authorization.

IV.

Accordingly, pursuant to sections 103, 161i, 182 and 186 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED THAT:

A. Effective immediately, safety-related construction activities, including rework of identified deficient construction, shall be suspended.

B. The licensee shall show cause why safety-related construction activities, including reworking activities, should not remain suspended until the licensee:

(1) Has obtained an independent review of its management of the Zimmer project, including its quality assurance program and its quality verification program, to determine measures needed to ensure that construction of the Zimmer plant can be completed in conformance with the Commission's regulations and construction permit.

(a) The independent organization conducting this review shall be knowledgeable in QA/QC matters and nuclear plant construction and shall be acceptable to the Regional Administrator. The independent organization shall make recommendations to the licensee regarding necessary steps to ensure that the construction of the facility can be completed in conformance with the Commission's regulations and the construction permit. A copy of the independent organization's recommendations and all exchanges of correspondence, including drafts, between the independent organization and CG&E shall be submitted to the Regional Administrator at the same time as they are submitted to the licensee. In making recommendations, the independent organization shall consider at a minimum the following alternatives for management of the Zimmer project and shall weigh the advantages and disadvantages of each alternative:

1. Strengthening the present CG&E organization.
2. Creation of an organizational structure where the construction management of the project is conducted by an experienced outside organization reporting to the chief executive officer of CG&E.
3. Creation of an organizational structure where the quality assurance program is conducted by an experienced outside organization reporting to the chief executive officer of CG&E.

4. Creation of an organizational structure with both quality assurance and construction project management conducted by an experienced outside organization reporting to the chief executive officer of CG&E.

(b) The licensee shall submit to the Regional Administrator the licensee's recommended course of action on the basis of this independent review. In evaluating the recommendations of the independent organization, the licensee shall address why it selected particular alternatives and rejected others. The licensee's recommendations and its schedule for implementation of those recommendations shall be subject to approval by the Regional Administrator.

(2) Following the Regional Administrator's approval in accordance with section IV B(1)(b),

(a) Has submitted to the Regional Administrator an updated comprehensive plan to verify the quality of construction of the Zimmer facility and the Regional Administrator of NRC Region III has approved such plan. In preparing this updated comprehensive plan, the licensee shall review the ongoing Quality Confirmation Program to determine whether its scope and depth should be expanded in light of the hardware and programmatic problems identified to date. The updated plan shall include an audit by a qualified outside organization, which did not perform the activities being audited, to verify the adequacy of the quality of construction; and

(b) Has submitted to the Regional Administrator a comprehensive plan, based on the results of the verification program, for the continuation of construction, including reworking activities, and the Regional Administrator has confirmed in writing that there is reasonable assurance that construction will proceed in an orderly manner and will be conducted in accordance with the requirements of the Commission's regulations and the Construction Permit No. CPPR-88.

C. The Regional Administrator may relax all or part of the conditions of section IV.B for resumption of specified construction activities, provided such activities can be conducted in accordance with the Commission's regulations and the provisions of the construction permit.

V.

Within 25 days of the date of this order, the licensee may show cause why the actions described in section IV should not be ordered by filing a written answer under oath or affirmation that sets forth the matters of fact and law on which the licensee relies. As provided in 10 CFR 2.202(d), the licensee may answer by consenting to the order proposed in section IV of this order to show cause. Upon the licensee's consent, the terms of section IV.B of this order will become effective. Alternatively, the licensee may request a hearing on this order within 25 days after the issuance of this order. Any request for a hearing or answer to this order shall be submitted to the Secretary, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. A copy of the request or answer shall also be sent to the Director, Office of Inspection and Enforcement, and to the Executive Legal Director at the same address, and to the Regional Administrator, NRC Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137. A request for a hearing shall not stay the immediate effectiveness of section IV.A of this Order.

If the licensee requests a hearing on this order, the Commission will issue an order designating the time and place of hearing. If a hearing is held, the issues to be considered at such a hearing shall be whether the facts set forth in sections II and III of this order are true and whether this order should be sustained.

Commissioners Ahearne and Roberts dissent from this decision. Their dissenting views are attached.

It is so ORDERED.

For the Commission

John C. Hoyle
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 12th day of November, 1982.

DISSENTING VIEWS OF COMMISSIONER AHEARNE

I agree with both the substance and the direction for change described in this order. However, I would have simply issued a Show Cause Order and would not have made it immediately effective.

DISSENTING VIEW OF COMMISSIONER ROBERTS

I disagree with the action taken by the Commission majority on several grounds. First, I believe the Commission's action in immediately suspending construction at the Zimmer facility is precipitous. Earlier this year, Cincinnati Gas & Electric Company (CG&E) made substantial changes in its management structure in order to manage more effectively construction activities and to monitor more carefully quality assurance programs. Despite the fact that this new organizational structure is relatively untested, the Commission is now suspending, effective immediately, all construction and corrective actions at the site. Additionally, the NRC Staff admits that CG&E's enhanced Quality Confirmation Program (QCP) and large quality control staff is effectively identifying existing construction problems. Moreover, to the extent that actual construction deficiencies have been found, CG&E's management has demonstrated its willingness to take strong remedial actions by issuing stop work orders in those areas where construction deficiencies have been found. In a plant that is approximately 98 percent complete, the Commission is requiring the relatively few remaining construction activities and the ongoing corrective actions necessitated by the QCP to stop immediately while additional organizational changes are implemented.

Second, I believe the Commission's action does not comport with its own practice. In *Nuclear Regulatory Commission* (Licensees Authorized to Possess . . . Special Nuclear Materials), CLI-77-3, 5 NRC 16, 20 (1977), the Commission said that "[a]vailable information must demonstrate the need for [such] emergency action and *the insufficiency of less drastic measures*" (emphasis added). *See also Consumers Power Co.* (Midland Plant, Units 1 & 2), CLI-73-38, 6 AEC 1082, 1083 (1973). I believe that, in this case, some of the less drastic alternatives proposed by the Staff would be adequate to resolve the problems at this facility. For example, the Commission could send CG&E a letter indicating that at this time the Commission does not have sufficient information to conclude that Zimmer has been constructed in substantial conformance with the construction permit. The Commission could request the provision of information on the part of CG&E which, if available, would provide the Commission with the necessary assurance. *See* 10 CFR 50.54(f).

Third, in the absence of willfulness, the Commission may suspend construction, effective immediately, in accordance with Section 9b of the Administrative Procedures Act and the Commission's regulations *only* if the Commission finds that the public health, safety, or interest requires such action. I do not believe that the concerns listed in the Commission's Order show that the public health and safety require immediate suspension of all construction and corrective actions at the Zimmer site. Indeed, Mr. James Keppler, the Region III Administrator, has stated that CG&E's QCP has been successful in identifying existing construction problems. Transcript of Public Meeting on the Status of Zimmer, October 28, 1982 at 5. Additionally, most of the NRC inspection findings arising out of the QCP point to administrative or procedural deficiencies, rather than to actual material or construction errors. While the NRC's level of confidence in the adequacy of the plant construction has been reduced, it has not been shown by the NRC that problems exist which require immediate resolution to protect the public health and safety. Moreover, I do not believe this action is in the public interest.

I am also concerned that the Order has been approved without consideration for the Applicant's proposal to correct management and construction problems. That proposal, outlined in a letter to the Commissioners dated November 10, 1982, contained all of the essential elements approved by this Order. Specifically, the proposal calls for obtaining new project management, stopping all rework on quality confirmation matters, and an independent third party review to confirm the acceptability of selected safety systems. In view of the voluntary agreement by CG&E to such drastic measures, I feel that this Order is primarily punitive in nature and does little to correct problems in the interest of public health and safety.

Finally, I disagree with the Commission's Order because of the potential for delay inherent in this procedure. CG&E has an absolute right to a hearing on the Commission's Order. If CG&E avails itself of this right, then other "interested persons" will be entitled to demand a hearing. Once started, the hearing would be difficult to bring to an expeditious close. Even if the Staff and CG&E were to reach agreement on the corrective actions to be taken, litigation of the requirements imposed by the Commission Order would continue. *Consumers Power Company* (Midland Plant, Units 1 & 2), ALAB-315, 3 NRC 101 (1976); *Dairyland Power Cooperative* (La Crosse Boiling Water Reactor), LBP-81-7, 13 NRC 257, 264-65 (1981).

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

PETITION OF SUNFLOWER COALITION **November 15, 1982**

The Commission denies a petition for reconsideration of its March 30, 1982 approval of an amended agreement with the State of Colorado that authorized the State to assume regulatory authority over byproduct, source and special nuclear material in quantities less than a critical mass, including uranium mill tailings.

ATOMIC ENERGY ACT: COOPERATION WITH STATES

Under Section 274b of the Atomic Energy Act of 1954, as amended, the Commission may enter into an agreement with the Governor of any State that provides for discontinuance of certain regulatory authority of the Commission and the assumption of that authority by the Agreement State.

ATOMIC ENERGY ACT: COOPERATION WITH STATES (URANIUM MILL TAILINGS)

Agreement States are not required under either the Atomic Energy Act or the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), to provide their radiation control enforcement agencies with civil penalty authority.

ATOMIC ENERGY ACT: COOPERATION WITH STATES

Section 274o of the Atomic Energy Act requires, *inter alia*, of Agreement States only that there be procedures under state law for judicial review of the State's written determination required to be made in licensing actions under Section 274 (o)(3)(A)(iii); Section 274o does not limit the source of those judicial procedures to any particular State statute or other authority.

ATOMIC ENERGY ACT: COOPERATION WITH STATES

The NRC has the authority under Section 274j of the Atomic Energy Act to terminate or suspend an agreement with a State and to reassert its own licensing authority. An agreement is not, however, to be permanently terminated or revoked for minor technical failures to comply with Section 274 or for single incidents of State inaction, but only in exceptional circumstances.

ATOMIC ENERGY ACT: COOPERATION WITH STATES

The NRC may temporarily suspend all or part of an agreement with a State entered into under Section 274 without notice or hearing where (1) an emergency situation exists which requires immediate action to protect the public health and safety, *and* (2) the State has failed to take steps necessary to contain or eliminate the dangers within a reasonable time. The temporary suspension is to remain in effect only for as long as the emergency exists. This authority is to be used only as a last resort.

MEMORANDUM AND ORDER

On May 11, 1982, the Sunflower Coalition filed with the Commission a petition for reconsideration of the NRC's March 30, 1982 approval of an amended agreement with the State of Colorado. The Commission entered into the amended agreement at the request of the Governor of that State and pursuant to section 274 of the Atomic Energy Act (42 U.S.C. 2021). The Commission denies Sunflower's petition.

Statutory Framework

Under section 274b of the Atomic Energy Act of 1954, as amended, the Commission is authorized to enter into agreements with the Governor of any State providing for the discontinuance of certain regulatory authority of the Commission and the assumption of that regulatory authority by the Agreement State. The Commission entered into such an agreement with the State of Colorado on January 16, 1968. See 33 *Fed. Reg.* 2400 (January 31, 1968). Under this agreement the State has regulated byproduct, source and special nuclear material in quantities less than a critical mass. In particular, the State's authority over some material pursuant to this agreement allowed the State to regulate uranium milling, which otherwise would have been subject to exclusive regulation by the NRC.

Prior to the passage of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), Pub.L. 95-604, the direct control of uranium mill tailings, as distinct from the milling operations themselves, remained a State responsibility pursuant to its inherent police power, whether or not the State had entered into an agreement with the Commission. The passage of UMTRCA changed this legal structure. UMTRCA added uranium mill tailings to the definition of byproduct material in section 11(e)(2) (42 U.S.C. 2014(c)) of the AEA and by so doing gives the Commission direct regulatory authority over those mill wastes. UMTRCA amended section 274 of the AEA to provide that Agreement States may continue to regulate mill tailings if they comply with certain conditions, including the requirement that State licensing and regulatory standards must be at least as stringent as the Federal standards. Pub.L. 95-604, Section 204(e)(1); 92 Stat. 3037; 42 U.S.C. 2021(2). In addition, the State must require procedures which include public hearings, written environmental analyses and judicial review of licensing actions. Pub.L. 95-604, Section 204(e)(1); 92 Stat. 3037; 42 U.S.C. 2021(o)(3).

A 1979 amendment to UMTRCA made clear that there was to be no overlapping or concurrent State and Federal jurisdiction over mill tailings. Instead, Congress provided that States could continue to regulate mill tailings until November 9, 1981, after which NRC would have exclusive authority to regulate mill tailings unless a State entered into an amended agreement under section 274(b) and (o) of the AEC. UMTRCA Section 204(e)(2) and (h), as amended by Pub.L. 96-106 (93 Stat. 800) Section 22 (1979). However, a provision of the Energy and Water Development Appropriation Act for fiscal year 1982 essentially postponed the effective date for NRC authority to regulate uranium mill tailings until September 30, 1982; the terms of this provision were, in turn, extended by the Continuing Appropriations Resolution for FY 1983, until December 17, 1982.[1] Although under the Appropriations Act provision the NRC may not displace a State's continued regulation of uranium mill tailings during the period from November 8, 1981 through September 30, 1982, now December 17, 1982, even in the absence of an agreement specifying the terms of that regulation, a State and the NRC are not precluded from voluntarily entering into an amended agreement during that time to provide for State regulations which comply with UMTRCA. In a letter of September 29, 1981, the Governor of the State of Colorado requested the NRC to enter into such an amended agreement. Since the State intended its amended agreement to reflect the requirements of UMTRCA, we have dealt with Sunflower's claims as if UMTRCA were fully in effect.[2]

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[1] The provision limited the expenditure of NRC's annual appropriation for fiscal year 1982 for purposes of implementing UMTRCA:

> *Provided further*, That no funds appropriated to the Nuclear Regulatory Commission in this Act may be used to implement or enforce any portion of the Uranium Mill Licensing Requirements published as final rules at 45 *Federal Register* 65521 to 65538 on October 3, 1980, or to require any State to adopt such requirements in order for the State to continue to exercise authority under State law for uranium mill and mill tailings licensing, *or to exercise any regulatory authority for uranium mill and mill tailings licensing in any State that has acted to*

(Continued)

The Sunflower Petition

On March 30, 1982 the Commission approved an amended agreement with the State of Colorado, which became effective when signed by the Governor on April 20, 1982. In its petition the Sunflower Coalition requests that the Commission reconsider its March 30th decision approving the amended agreement and states three grounds for its request.

Petitioner first asserts that Colorado's radiation control program is inadequate to protect the public health and safety because the Colorado Department of Health (CDH) does not have the authority to impose civil penalties on operators of uranium mills and tailings disposal sites. Sunflower argues that a meaningful enforcement of uranium mill tailings regulations is virtually impossible without civil penalty authority and cites in support of this assertion the fact that the NRC has drafted and sent to Agreement States a model civil penalties act. Sunflower raised this same issue in its November 16, 1981 comments to the Commission on

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> *exercise such authority under State law:* Provided, however, That the Commission may use such funds to continue to regulate byproduct material, as defined in section 11e.(2) of the Atomic Energy Act of 1954, as amended, in the manner and to the extent permitted prior to October 3, 1980.

Pub.L. 97-88, Title IV, Nuclear Regulatory Commission, Salaries and Expenses (95 Stat. 1147-1148 (1981)) (emphasis added).

Section 101(g) of the Continuing Appropriations Resolution stated:

> *Provided further*, That no appropriation or fund made available or authority granted pursuant to this paragraph shall be used to initiate or resume any project or activity for which appropriations, funds, or other authority were not available during the fiscal year 1982 without prior approval of the Committees on Appropriations. . . .

Pub.L. 97-276 (96 Stat. 1135, October 2, 1982).

[2] Because the NRC is precluded from displacing exercise of State authority over mill tailings at this time, it follows that even if the Commission were to find that the amended agreement did not satisfy UMTRCA, a Commission suspension, revocation, termination or amendment of the agreement would not force an alteration of the State's program to regulate uranium milling and tailings disposal. The only recourse available to the NRC would be to renegotiate the agreement with the Governor of Colorado. However, because the NRC and the State of Colorado intended to develop an amended agreement which would comply with UMTRCA, we have proceeded to consider Sunflower's petition as if UMTRCA was applicable and have found that the amended agreement is fully consistent with that Act.

the proposed amended agreement.[3] The Commission considered Sunflower's comments in deciding to approve the amended agreement. Sunflower does not present in its petition any information which persuades us to reconsider our approval of the Colorado agreement.

The absence of one specific type of enforcement authority does not necessarily make the Colorado program inadequate to protect the public health and safety. Civil penalty authority is not required by either UMTRCA or the Atomic Energy Act. The NRC has recommended that Agreement States include civil penalty authority in their enforcement programs but does not require that an Agreement State provide such authority in order to have an effective enforcement program.

The Commission's policy in reviewing the enforcement authority of Agreement States has been to determine whether the State has sufficient enforcement options available so that a level of enforcement activity similar to that of the NRC is possible. The focus has not been on specific types of enforcement options. The Commission believes that civil penalty authority is useful but does not find it indispensable for the protection of the public health and safety. The State of Colorado has an enforcement program which includes several enforcement options other than the imposition of civil penalties.[4] These enforcement mechanisms are sufficient to maintain a level of enforcement activity similar to that of the Commission and to protect the public health and safety. We have no indication that they will not use the enforcement options available to them to effectively protect the public health and safety.[5] The Commission has in the past found the State's enforcement practices, even without civil penalty authority, to be compatible with those of the Commission.

Petitioner's second assertion is that Colorado has no statutory provision for judicial review of uranium licensing decisions, contrary to Federal law. In support of this proposition, Sunflower cites a decision by the Colorado Court of Appeals, *National Wildlife Federation, et al.* v. *Cotter Corp., et al.*, 646 P.2d 393 (1981), which Sunflower asserts held that the Colorado Radiation Control Act does not provide for judicial review. Therefore, Sunflower concludes, an express procedural requirement of section 274o of the AEA is not met by the Colorado Radiation Control Program, contrary to the Commission's conclusion that the Colorado program is "in accordance with the requirements of section 274o."

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[3] The Sunflower Coalition raised, and the Commission responded to, this same issue in its May 1981 petition challenging the Agreement State Program with the State of Colorado. *See*, *In the Matter of Petition of Sunflower Coalition*, CLI-81-13, 13 NRC 847, 858 (1981).

[4] The State of Colorado can issue emergency orders to protect public health and safety and impound radioactive materials (C.R.S. §25-11-103(5)), initiate injunctive proceedings against licensees (C.R.S. §25-11-106), and impose criminal penalties (C.R.S. §25-11-107(3)). Further, the Colorado Rules and Regulations Pertaining to Radiation Control, in Section 3.22.2, authorize revocation, suspension, or modification of licenses.

[5] The Commission has previously explained why it does not believe so-called "serious incidents of failure" in the Colorado program as cited by Sunflower amount to sufficient reason to question the program's effectiveness. See 13 NRC 858, 859.

The Commission believes that Sunflower has misinterpreted the requirements of Section 274. Section 274o of the AEA requires only that there be procedures under State law for judicial review of the written determination required to be made in licensing actions under section 274(o)(3)(A)(iii). UMTRCA, which amended the AEA to include this requirement, does not require that the Colorado Radiation Control Act (CRCA) itself specifically contain a provision for judicial review. In Colorado, judicial review of licensing determinations is provided by statutes other than the CRCA. The Colorado Rules and Regulations Pertaining to Radiation Control (§3.9.9.3.4) provide that parties to licensing action hearings, including persons affected or aggrieved by State action, may appeal from the decision of the hearing as provided by the Colorado Administrative Procedure Act. Section C.R.S. 1973, 24-4-106 of the Colorado APA provides that final agency action is subject to judicial review and that any party adversely affected by any agency action may commence an action for judicial review in a Colorado district court. An agency action includes the whole or part of any agency rule, order, interlocutory order, *license*, sanction, relief or the equivalent or denial thereof, or failure to act. C.R.S. 1973, Section 24-4-102(1). Colorado thus has procedures for judicial review as required by section 274o.[6] Further, C.R.S. 1973, 21-1-113 (Supp. 1981) grants the right of judicial review of source material license decisions to persons "aggrieved and affected." Thus, there are two statutory grants of jurisdiction to Colorado courts to review the Department of Health's decisions to issue source material mill radioactive materials licenses.

Petitioner's final claim is that the Colorado program has "failed to comply with 'UMTRCA' and other State and federal statutes and regulations." This claim appears to be a restatement of a claim Sunflower made in a petition to the Commission on May 26, 1981. In fact, Sunflower cites in support of its claim here its Complaint in the U.S. District Court for the District of Colorado, which dealt with the same allegations as the May 26 petition. The allegations enumerated in that Complaint were disposed of by the Commission in its decision of June 24, 1981. *See In the Matter of Petition of Sunflower Coalition*, CLI-81-13, 13 NRC 847 (1981).[7] In that decision the Commission, after considering specifically Sunflower's allegations of deficiencies in the Colorado program and of specific incidents of failure to protect the public health and safety, concluded that the

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[6] The case cited by Sunflower, *National Wildlife Federation* v. *Cotter Corp.*, does not alter this conclusion. That case decides only that the plaintiffs in that case lacked standing to bring a private action to enforce the Colorado Radiation Control Act. On rehearing, the court specifically refused to decide whether the plaintiffs had standing to sue under the Colorado Administrative Procedure Act, §24-4-101, *et seq.*, C.R.S. 1973, since the plaintiffs had not begun their action within the 30-day mandatory time period set out in that act.

[7] The District Court subsequently dismissed Sunflower's complaint as being outside the District Court's jurisdiction. *See Sunflower Coalition* v. *Nuclear Regulatory Commission, et al.*, 534 F.Supp. 466 (D.Colo. 1982). Sunflower did not appeal the District Court's decision.

Colorado program was adequate to protect the public health and safety and that the deficiencies and incidents alleged have not caused any serious failure by Colorado to protect public health and safety. The Commission at that time found no basis to justify terminating or suspending the agreement with Colorado. 13 NRC at 856-860.

Petitioner does not now present a new claim or even new information on its old claim.[8] It merely recycles complaints about the Colorado program which the Commission considered and disposed of almost a year ago. In the Commission's opinion, they do not provide a sufficient reason to reconsider Commission approval of the amended agreement. In sum, the Commission finds no basis in the Sunflower petition for reconsidering its amended agreement with Colorado.

The Commission also notes that the amended agreement, which is now in effect, cannot be terminated by the Commission except in accordance with the provisions of section 274 of the Atomic Energy Act of 1954, as amended. The NRC retains the authority under section 274j of the AEA to terminate or suspend an agreement with a State and to reassert its own licensing authority. However, Congress' clear intent was that Agreement States were to regulate agreement materials and that once granted, their authority is not to be revoked lightly. The legislative history of this section states that this authority to terminate "represents a reserve power, to be exercised only under extraordinary circumstances." H.R. Rep. No. 1125, 86th Cong. Sess. 1 (1959), p. 12. An agreement is not to be permanently terminated or revoked for minor technical failures to comply with Section 274 or for single incidents of State inaction, but only in exceptional circumstances.[9] Rather, the NRC is to cooperate with Agreement States and through its review process obtain compliance by States. The power to terminate the agreement is to be one of last resort where all others fail.

In this case, Sunflower has not presented sufficient information to justify terminating or withdrawing the amended agreement with Colorado. The Commission declines, therefore, to reconsider its approval of the amended agreement or to consider terminating the new agreement. The Sunflower Coalition's petition for reconsideration is denied.

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[8] By letter of May 19, 1982, Sunflower Coalition supplemented its petition with testimony of a Mr. Belmont Evans before a Colorado State hearing. After considering this testimony, the Commission believes it does not constitute sufficient cause for the Commission to reconsider its conclusions about the Colorado program.

[9] However, to offset the original lack of Commission authority to act in single instances of State inaction, Congress in 1980 amended Section 274j to provide for temporary suspension of all or part of an agreement. The emergency power to terminate without notice or hearing is limited to those cases where (1) an emergency situation exists which requires immediate action to protect the health and safety of the public, *and* (2) the State has failed to take steps necessary to contain or eliminate the dangers within a reasonable time. The temporary suspension is to remain in effect only for as long as the emergency exists. Pub.L. 96-295; 94 Stat. 787 (June 30, 1980). Congress stated that this authority would be only rarely needed by NRC and that it intended the emergency power to be used only as a last resort. S. Rep. No. 176, 96th Cong. Sess. 2 (1979). No such emergency situation exists in Colorado.

It is so ORDERED.

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 15th day of November, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-361-OL
50-362-OL

SOUTHERN CALIFORNIA EDISON COMPANY, *et al.*
(San Onofre Nuclear Generating Station, Units 2 and 3)

November 19, 1982

The Commission directs the Licensing Board to suspend its proceeding concerning the adequacy of arrangements by offsite response organizations for emergency medical services until further Commission order, and orders that the license conditions imposed by the Board (LBP-82-39, 15 NRC 1163 (1982); LBP-82-40, 15 NRC 1293 (1982)) shall otherwise remain in effect.

CORRECTED MEMORANDUM AND ORDER

On May 14, 1982, the Licensing Board issued its decision in the operating license proceeding for San Onofre Units 2 and 3, retaining jurisdiction over the question of the adequacy of emergency medical services arrangements by the offsite response organizations. While the Licensing Board found that the applicants had not met the requirements of 10 CFR 50.47(b)(12) regarding arrangements for medical services for members of the public, it determined that these deficiencies did not preclude full-power operations for six months provided the deficiencies are remedied. LBP-82-39, 15 NRC 1163.

Subsequently, the Commission directed certification of two questions on the interpretation of 10 CFR 50.47(b)(12), CLI-82-27, 16 NRC 883 (1982). The Licensing Board has now requested further guidance from the Commission on whether to continue with the hearings it has scheduled in light of the pendency of the certified questions. Specifically, the Licensing Board certified the following question to the Commission:

> Does the Commission wish the Licensing Board to continue the proceeding initiated by the Board's Order of October 1, 1982, with a view toward the Commission's considering the record and the Licensing Board's findings in its decision of the certified questions? Alternatively, does the Commission wish the Licensing Board to terminate or suspend its proceeding until after the Commission decides the certified questions, in order to avoid the possible waste of resources?

In its order directing certification, the Commission specified that the license condition imposed by the Licensing Board would remain in effect pending the Commission's consideration of the issue. The Commission has reviewed the Licensing Board's October 1, 1982 order and believes further evidentiary proceedings would not be fruitful at this time. Accordingly, the Board should suspend its proceeding until further order of the Commission. The Board's license conditions shall otherwise remain in effect.

Commissioners Gilinsky and Asselstine dissent from this decision.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 19th day of November, 1982.

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*Commissioner Roberts was not present when this Order was approved. Had Commissioner Roberts been present at the meeting he would have voted with the majority. To enable the Commission to proceed with this case without delay, Commissioner Asselstine, who was a member of the minority on the question up for decision, did not participate in the formal vote.

Cite as 16 NRC 1512 (1982) CLI-82-36

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-358**

CINCINNATI GAS AND ELECTRIC COMPANY, ***et al.***
(William H. Zimmer Nuclear Power Station, Unit No. 1)

November 24, 1982

The Commission denies an intervenor's petition to disqualify from this proceeding a specified NRC Staff attorney for allegedly attempting to prevent the compilation of a complete record in the proceeding and exhibiting a pro-applicant bias. The Commission finds no grounds in the record for the first allegation and dismisses it. With respect to the second, the Commission determines that the allegation would be appropriately considered by the Executive Director of Operations outside the bounds of this proceeding.

RULES OF PRACTICE: DISQUALIFICATION

Petitions which raise questions about the ethics and reputation of another member of the Bar should only be filed after careful research and deliberation. Moreover, although ill-feeling understandably results from any petition for disciplinary action, retaliation in kind should not be the routine response.

RULES OF PRACTICE: DISQUALIFICATION

The Commission has no interest in general matters of attorney discipline and chooses to focus instead on the means necessary to keep its adjudicatory proceedings orderly and to avoid unnecessary delays. 45 *Fed. Reg.* 3594 (1980).

RULES OF PRACTICE: DISQUALIFICATION

While the Commission has inherent supervisory power over all agency personnel and proceedings, it is not necessarily appropriate to bring any and all matters to the Commission in the first instance. Under the Commission's rules (10 CFR 2.713), where a complaint relates directly to a specified attorney's actions in a proceeding before a licensing board, that complaint should be brought to the board in the first instance if correction is necessary for the integrity of the proceedings. See 45 *Fed. Reg.* 3594.

RULES OF PRACTICE: DISQUALIFICATION

A perceived bias in the attorney's view of a proceeding is not a conflict of interest in any accepted legal meaning; it is to be distinguished from the kind of conflict recognized in law in which an attorney has interests that compromise his ability to represent his client, *e.g.*, that he has previously represented another party in the same proceeding, or has financial interests in common with another party, or the like.

ORDER

On July 20, 1982, Miami Valley Power Project (MVPP), an intervenor in the captioned operating licensing proceeding, petitioned the Commission to disqualify a specified NRC Staff attorney from further participation in these proceedings. Both the Applicants, Cincinnati Gas & Electric Co., *et al.*, and the Staff responded in opposition to MVPP's petition; MVPP then replied.[1] On consideration of all the pleadings, the Commission dismisses MVPP's petition for the reasons set forth briefly below.

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[1] The Commission's procedures generally do not provide for a reply. In this instance, however, the Staff, in a departure from normal pleading practice, incorporated into its response a motion to have the Licensing Board review the propriety of MVPP's counsel's conduct in filing the instant petition to disqualify. This opened the door [illegible] further pleading by MVPP. We have thus considered MVPP's reply even though arguably any part of it not responding to Staff's motion was unauthorized by our rules.
(Continued)

In essence, MVPP brings two complaints. First, MVPP alleges that the specified Staff attorney acted to prevent compilation of a complete record in the Zimmer proceeding by advising the Chairman of the Atomic Safety and Licensing Board to throw away a notification regarding allegedly false representations made by Applicants to the Advisory Committee on Reactor Safety. Second, MVPP complains that the specified Staff attorney was biased in favor of the Applicants and thus had a conflict of interest which caused him improperly to discharge his duties to the disadvantage of MVPP. MVPP claims that the bias was exhibited by the attorney's refusal to sign a pleading where Staff supported MVPP's motion to reopen to admit new contentions. They also claim that the attorney falsely advised the Licensing Board that he was unable to contact MVPP's counsel regarding an extension of time that Staff sought in which to respond to MVPP's motion to admit new contentions.

MVPP says that it appropriately brought these complaints to the Commission because the Commission has inherent supervisory authority over all agency personnel and proceedings. While it may be true that the Commission is empowered to decide all such matters, it does not mean that it is appropriate to bring any and all matters to the Commission in the first instance, and moreover, our rules provide otherwise. *See* 10 CFR 2.713. Here, MVPP's first complaint relates directly to the specified attorney's actions in the proceeding before the Licensing Board and should have been brought to that Board in the first instance if correction was necessary for the integrity of the proceedings. *See* 45 *Fed. Reg.* 3594. We would refer it there for consideration were it not apparent from uncontroverted facts of record that the Staff attorney's behavior does not merit disciplinary action. While the attorney's conversation with the then chairman of the Licensing Board Panel may have understandably evoked some concern on the part of MVPP, we detect no intent to withhold information regarding a Staff investigation from the record. This is evident in that the attorney advised the Chairman of the Zimmer Licensing Board on the record and with reasonable promptness that an investigation had been initiated[2] and subsequently provided the investigation report for the record of that

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We want to stress that petitions of this sort which raise questions about the ethics and reputation of another member of the Bar should only be filed after careful research and deliberation. Moreover, we take this occasion to note that, understandably, ill feeling results from any petition for disciplinary action, but that retaliation in kind should not be the *routine* response. As we pointed out when the rules on attorney conduct in our adjudicatory proceedings, 10 CFR 2.713, were last amended, "The Commission has no interest in general matters of attorney discipline and chooses to focus instead on the means necessary to keep its adjudicatory proceedings orderly and to avoid unnecessary delays." 45 *Fed. Reg.* 3594 (1980).

[2] See Hearing Transcript at 471 (May 23, 1979). Contrast with *Virginia Electric and Power Company* (North Anna Power Station, Units 1 and 2), CLI-76-22, 4 NRC 480, 491-92, n.11 (1976), *affirmed sub nom., Virginia Electric and Power Co.* v. *N.R.C.*, 571 F.2d 1289 (4th Cir. 1978). The matter was unfortunately referred to as a "small housekeeping thing" but the disclosure was that Staff was checking out "allegations of some misinformation on behalf of the applicant," and we believe that the substance of this disclosure was sufficient to call to the Board's and parties' attention the potential seriousness of the matter.

proceeding. *See* Letter to Licensing Board members, September 26, 1979 (attaching Region III Report No. 50-358/79-21). Moreover, it is clear from the record that the Staff attorney was instrumental in initiating the investigation, a role which is not at all consistent with the charge of cover-up. Accordingly, we will ourselves dismiss this charge. *See United States Department of Energy, Project Management Corporation, Tennessee Valley Authority* (Clinch River Breeder Reactor Plant), CLI-82-22, 16 NRC 405 (1982).

Regarding MVPP's second complaint, we note first that while MVPP characterizes the attorney's allegedly offending behavior as a conflict of interest, MVPP does not use that term in any accepted legal meaning, but rather refers to a perceived bias in the attorney's view of the proceedings. This is distinguished from a situation where an attorney had a conflict of interest of a type recognized in law to compromise counsel's ability to represent his client, *e.g.*, that he had previously represented another party in the proceeding, or had financial interests in common with another party, or the like. Given the nature of MVPP's complaint,[3] we agree with Staff's response for the reasons there set forth that the matter would be appropriately considered by the Executive Director of Operations outside the bounds of this proceeding. Accordingly we express no view on the matter. Commissioner Gilinsky dissents from this decision.

The petition is DENIED.

For the Commission[4]

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
the 24th day of November, 1982.

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[3] MVPP's complaint that the Staff attorney wrongly stated that he had been unable to reach MVPP strikes us as trivial and will not be discussed further. We also decline to act on Staff's request for disciplinary action against MVPP's attorney for filing the instant petition.

[4] Commissioner Gilinsky was not present when this Order was approved but had previously indicated that he would disapprove.

Atomic Safety and Licensing Appeal Boards Issuances

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Vice Chairman
Dr. Lawrence R. Quarles
Dr. W. Reed Johnson
Thomas S. Moore
Christine N. Kohl
Stephen F. Eilperin
Gary J. Edles
Dr. Reginald L. Gotchy
Howard A. Wilber

APPEAL BOARDS

1516

Cite as 16 NRC 1517 (1982) ALAB-701

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARDS

Administrative Judges:[*]

Alan S. Rosenthal, Chairman
Dr. John H. Buck
Dr. W. Reed Johnson
Thomas S. Moore

In the Matters of

PHILADELPHIA ELECTRIC COMPANY, *et al.* (Peach Bottom Atomic Power Station, Units 2 and 3)	**Docket Nos. 50-277 50-278**
METROPOLITAN EDISON COMPANY, *et al.* (Three Mile Island Nuclear Station, Unit No. 2)	**Docket No. 50-320**
PUBLIC SERVICE ELECTRIC AND GAS COMPANY (Hope Creek Generating Station, Units 1 and 2)	**Docket Nos. 50-354 50-355 November 19, 1982**

The Appeal Boards for this consolidated proceeding determine that intervenors have failed to demonstrate a need for a further evidentiary hearing on the question of the effects on human health of the annual fuel cycle radon releases attributable to the operation of the Peach Bottom (Unit 3), Three Mile Island (Unit 2), and Hope

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[*] The Appeal Panel members listed are on one or more of the Boards assigned to hear the captioned proceedings; their collective designation is simply a convenience in issuing this decision.

Creek (Units 1 and 2) reactors; and conclude on the basis of the existing evidentiary record that the health effects of those annual releases are not sufficiently significant to tip the National Environmental Policy Act (NEPA) cost-benefit balances against operation of these facilities. The Boards terminate their review of the initial decisions in each of the three proceedings (LBP-74-42, 7 AEC 1022 (1974) (*Peach Bottom*); LBP-77-70, 6 NRC 1185 (1977) (*TMI-2*); LBP-78-15, 7 NRC 642 (1978) (*Hope Creek*)) and affirm each decision except to the extent modified in their previous review on other issues.

TECHNICAL ISSUES DISCUSSED

Health effects of radon releases from nuclear fuel cycle;
Expertise of witnesses;
Natural release of radon.

APPEARANCES

Jay E. Silberg and **Matias F. Travieso-Diaz,** Washington, D.C., for applicants, Metropolitan Edison Co., *et al.*

Troy B. Conner, Jr., and **Robert M. Rader,** Washington, D.C., for applicants, Philadelphia Electric Co., *et al.*, and Public Service Electric and Gas Co.

Judith R. Johnsrud and **Chauncey Kepford,** State College, Pa., for *Peach Bottom-Three Mile Island* intervenors, Citizens for a Safe Environment and the Environmental Coalition on Nuclear Power.

Bernard M. Bordenick for the Nuclear Regulatory Commission staff.

DECISION

In the fulfillment of its responsibilities under the National Environmental Policy Act, this agency is required to consider, *inter alia*, the environmental effects associated with the release of radioactive radon gas (radon-222) to the atmosphere as a result of the mining and milling of uranium for reactor fuel. Once determined, those effects must then be factored into the cost-benefit analyses underlying reactor licensing decisions.

In ALAB-640, 13 NRC 487, 539-542 (1981), we found the annual amounts of mining and milling radon releases attributable to the operation of the Peach

Bottom, Three Mile Island (Unit 2), and Hope Creek reactors. This decision concerns whether their environmental (*i.e.*, health) effects are sufficiently significant to tip the NEPA cost-benefit balances against the operation of those facilities.[1] For the reasons explained below, we answer that question in the negative without calling for any further evidence on the subject.

I.

A. The extended history of this consolidated proceeding was recounted in full in ALAB-640, *supra*, 13 NRC at 490-93. For present purposes, we confine ourselves to a summary of the more important events.

In 1974 the Commission's regulations were amended to set forth in tabular form the values to be assigned to the various environmental effects associated with the uranium fuel cycle. 10 CFR Part 51, Table S-3, "Table of Uranium Fuel Cycle Environmental Data." In 1978 the Commission determined that the value then provided in Table S-3 for radon releases was in error and must be deleted. Rather than immediately initiating a new rulemaking proceeding to obtain a new and more accurate value, the Commission elected to defer its further consideration of the matter of radon releases to await completion of the NRC staff's generic environmental impact statement on uranium milling. See 43 *Fed. Reg.* 15613 (April 14, 1978). For the interim, the licensing and appeal boards were to "receive new evidence on radon releases and on health effects resulting from radon releases." *Id.* at 15615-16.[2]

At that juncture, there were 17 construction permit and operating license proceedings pending before appeal boards. In addition, a licensing board had before it the construction permit proceeding involving the proposed Perkins facility. Upon receipt of the Commission's directive, that Board immediately embarked upon an evidentiary hearing on the radon release issue. On July 14, 1978, it rendered its decision on the issue, in which it determined that the radon emissions associated with the mining and milling of uranium added so little to the radon already in the environment (*i.e.*, natural background radon) as to be both undetectable and insignificant from a health effects standpoint. *Duke Power Company* (Perkins Nuclear Station, Units 1, 2, and 3), LBP-78-25, 8 NRC 87, 100 (1978).

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[1] Peach Bottom and Three Mile Island-2 are fully constructed. (The former is now in operation; the latter has, of course, been shut down since its disabling accident in 1979.) Hope Creek is still under construction.

[2] The staff's "Final Generic Environmental Impact Statement on Uranium Milling," (GEIS), NUREG-0706, was issued in September 1980. In accordance with a Commission directive, however, the determinations in ALAB-640 respecting release rates rested upon the disclosures in the adjudicatory record before us, rather than upon anything in the GEIS. See 13 NRC at 521. To date, the Commission has not promulgated a new Table S-3 value for radon-222 releases.

Against this background, we decided to employ a "lead case" approach in confronting the radon issue in the 17 proceedings that were in an appellate posture. Specifically, we gave the parties to those proceedings the opportunity "to supplement, contradict or object to" both the *Perkins* record and the determinations made by the *Perkins* Licensing Board on the basis of that record. ALAB-480, 7 NRC 796, 804-06 (1978).[3] Ultimately, we heard from intervenors in five of the proceedings. They challenged both the sufficiency of the *Perkins* record and the correctness of the result reached in that case.

Upon our consideration of the submissions to us, we elected (1) to consolidate the five proceedings on the radon issue alone; (2) to divide the issue into two components; (3) to conduct an evidentiary hearing limited to the first component — *i.e.*, for each reactor, the quantum of the radon releases attributable to the uranium fuel cycle per year of reactor operation; (4) to abide the outcome of that hearing before addressing the second component (the health effects of the determined releases); and (5) to hold in abeyance the entire radon issue insofar as concerned the 12 proceedings in which that issue had not been put into contest by a party. See ALAB-540, 9 NRC 428, 433 (1979); ALAB-562, 10 NRC 437 (1979). Subsequently, the construction permit applications for two of the facilities involved in the contested proceedings were withdrawn;[4] this reduced to three the number of facilities encompassed by the hearing.

B. Following the evidentiary hearing and the receipt of the parties' proposed findings of fact, we rendered ALAB-640. As previously noted, in that decision we determined the amount of radon which would be released in the mining and milling of the uranium necessary to provide fuel for the operation of each of the three facilities. We also concluded, by a divided vote, that a fuller opportunity had to be given the parties to demonstrate that the determined releases might have sufficient health effects to tip the NEPA cost-benefit balance for one or more of the facilities against reactor operation. 13 NRC at 539-42, 543-45.

No party sought Commission review of ALAB-640 and the Commission declined to review it *sua sponte*. Thereafter, we issued ALAB-654, 14 NRC 632 (1981), in which the procedures for the further consideration of the health effects aspect of the radon issue were detailed. In essence, we placed the burden upon those claiming a need for an evidentiary hearing on the health effects question to demonstrate at the threshold "the existence of a genuine issue of material fact respecting * * * the environmental significance of fuel cycle-related radon emissions." *Id.* at 634. The parties were explicitly informed that that demonstration would have to take the form of "the documented opinion of one or more *qualified* authorities to the effect that the incremental fuel cycle-related radon emissions will have a significant environmental effect in terms of human health." *Id.* at 635 (emphasis in original). We recorded our expectation that "any such opinion will explicitly take into account (1) the comparative relationship between the amount of those emissions (as found in ALAB-640) and of natural radon emissions; and (2) the fluctuations in natural emissions (indoor *vis a vis* outdoor as well as from one geographic area to another)." *Ibid.*

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[3] The *Perkins* record was formally incorporated in the record for each of the 17 proceedings before us.

[4] *Northern States Power Co.* (Tyrone Energy Park, Unit No. 1), Docket No. STN 50-484; *Rochester Gas and Electric Corp.* (Sterling Power Project, Nuclear Unit 1), Docket No. STN 50-485.

We concluded that, "[i]n the totality of circumstances, there is nothing unreasonable about requiring the intervenors thus to shoulder * * * the burden of going forward on the question of the need for a further hearing on environmental impact." In this connection, we stated:

> the subject of health effects was thoroughly explored in the *Perkins* evidentiary hearing in the context of fuel cycle-related radon emissions not dissimilar in amount to those later determined by us in these proceedings. And the Licensing Board's conclusion in that case that the incremental radon contribution of the uranium fuel cycle would not have significant health effects was grounded upon the testimony of highly qualified expert witnesses. *See* LBP-78-25, *supra*, 8 NRC at 95-100.
>
> One such witness was Dr. Leonard D. Hamilton, a physician who headed the Biomedical and Environmental Assessment Division at the Brookhaven National Laboratory. For over thirty years, Dr. Hamilton had been involved in the appraisal of radiation health risks. Prior to joining Brookhaven in 1964, he had spent 14 years on the staff of the Sloan-Kettering Institute for Cancer Research in New York City and had also served on the faculty of the Cornell University Medical College. Referring to the testimony of other expert witnesses for the applicant and the staff, Dr. Hamilton had this to say: "As can be seen [from that] testimony, the additional Radon-222 from the mining and milling [phases] of the uranium fuel cycle makes an additional negligible contribution to annual natural background radiation *and consequently, a similarly negligible impact on the health effects associated with the fuel cycle*" (emphasis supplied).
>
> Not having been parties to *Perkins*, the intervenors now before us cannot be deemed bound by Dr. Hamilton's conclusions. (This is so even though Dr. Chauncey Kepford, the representative of the *Peach-Bottom - Three Mile Island* intervenors, was permitted to cross-examine him on behalf of the *Perkins* intervenor). But in the absence of a concrete threshold showing that there is a difference in competent expert opinion on the health effects issue, there is wholly insufficient cause to require either the applicants in the instant proceedings or the staff to replow at yet another hearing the ground previously traversed by Dr. Hamilton and the other *Perkins* witnesses.

Id. at 634-35 (footnotes omitted).

C. In response to our invitation in ALAB-654, the *Peach Bottom-Three Mile Island* intervenors filed a memorandum on the health effects question, supported by the affidavit of Dr. Chauncey Kepford (one of their representatives).[5] According to those parties, radon releases in the amounts determined in ALAB-640 will pose a significant health risk and, thus, tip the cost-benefit balance against these nuclear power plants. Replies to that submission were then filed by the *Three Mile Island* applicants, the *Peach Bottom-Hope Creek* applicants (in a single document authored by their common counsel) and the NRC staff. All of these parties asserted that Dr. Kepford was not a qualified authority on the subject of health effects and that, in any event, his assertions lacked scientific basis and thus did not give rise to a genuine issue of fact necessitating resolution at a hearing. On the latter score, the *Three Mile Island* applicants appended to their memorandum the affidavit of Dr. Leonard Hamilton, who (as noted in ALAB-654, p. 1521, *supra*) had testified on the health effects question in *Perkins*.[6]

II.

As earlier seen (p. 1521, *supra*), ALAB-654 imposed two specific obligations upon the intervenors in connection with their endeavor to establish the existence of a genuine issue of material fact on the health effects question.[7] First, the intervenors had to demonstrate that "there is a difference in competent expert opinion" on the question; this obviously entailed "the documented opinion of one or more *qualified* authorities to the effect that the incremental fuel cycle-related radon emissions will have a significant environmental effect in terms of human health." Second, the expert opinion had to take into account both the amount of natural radon background radiation and the fluctuations in natural emissions from one locale to another.[8] On the latter score, we took specific note of the undisputed facts, disclosed in the *Perkins* record, that (1) fuel cycle-related radon emissions are minute compared to natural emissions; and (2) the amount of natural radon found in the environment varies widely from one geographic area to another and inside and outside of buildings. ALAB-654, 14 NRC at 633.[9] At the outset, therefore, we must consider whether the applicants and the staff are right in their claim that the intervenors' submission failed to meet either obligation.

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[5] That submission noted that it was joined in by the organization that had intervened in the proceeding involving the proposed Sterling facility. Although one of the five original consolidated proceedings, *Sterling* was dismissed when the construction permit application for it was later withdrawn. See p. 1520, *supra*. Notwithstanding this development, at our invitation the *Sterling* intervenor continued to participate on the radon issue. See ALAB-640, 13 NRC at 492 n.6.

No response to ALAB-654 was submitted by the *Hope Creek* intervenor.

[6] The *Perkins* intervenors had filed exceptions to the Licensing Board's radon decision, LBP-78-25, *supra*. Although the parties briefed those exceptions, we decided to hold our ruling on them in abeyance to await the outcome of this consolidated proceeding.

Early this year, leave was sought to withdraw the *Perkins* construction permit application. For that reason, we vacated three non-final partial initial decisions rendered in the proceeding, including LBP-78-25, and dismissed all pending appeals as moot. We explicitly stated, however, that this action did not "vitiate the testimony and other evidence contained in the record on the issue of the environmental effects associated with the release of radioactive radon gas [radon-222] to the atmosphere as a result of the mining and milling of uranium for reactor fuel." ALAB-668, 15 NRC 450, 452 n.3 (1982). In this connection, we stressed that that record had provided a portion of the basis for ALAB-640 and might be employed in any subsequent decisions in the consolidated radon proceeding. *Ibid*. Although ALAB-668 was brought to the attention of the parties now before us, none objected to the continued use of the *Perkins* record.

[7] It should be noted that, in their response to ALAB-654, the intervenors did not challenge the placing upon them of the burden of going forward on the matter of the need for an evidentiary hearing on that question. In any event, we remain persuaded that, for the reasons stated in ALAB-654 (see p. 1521, *supra*), that burden was properly allocated.

A. Dr. Kepford's affidavit is entirely devoid of any reference to his expert qualifications. Nor is this deficiency cured by anything in the intervenors' memorandum to which the affidavit was attached. Indeed, it would be impossible to glean from either the affidavit or the memorandum any information at all respecting either his educational background or his experience.

Perhaps intervenors thought such illumination to be unnecessary in light of the fact that Dr. Kepford had submitted a statement of professional qualifications in the *Perkins* proceeding and thereafter had been permitted by the Licensing Board to testify on the health effects question presented in that case. See pp. 1525, 1527-28, *infra*. In addition, at the hearing below in the *Three Mile Island* proceeding now before us, Dr. Kepford's testimony on the question likewise was received.

It appears, however, from an examination of the records in the two proceedings that neither Licensing Board ruled on the matter. For its part, the *Three Mile Island* Board expressly declined to pass upon Dr. Kepford's qualifications. Tr. 2929-31. As it indicated in its initial decision, his testimony had been admitted simply for "whatever weight is deemed appropriate." LBP-77-70, 6 NRC 1185, 1223 (1977).[10]

We have independently considered Dr. Kepford's qualifications as set forth in the *Perkins* record. His statement of professional qualifications (fol. Tr. 2819) discloses that he possesses a doctorate in chemistry obtained at the University of Calgary in Canada. Between 1967 and 1969, he was employed as an industrial research chemist by the United Aircraft Corporation. During the ensuing two years, he held an assistant professorship in chemistry at the York Campus of the Pennsylvania State University. The statement does not reflect any employment subsequent to 1971; rather, it indicates without elaboration that, since that date, Dr. Kepford has devoted himself fully to "the problems of nuclear power."

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[8] "Natural emissions," which produce "natural background radon," are derived from such things as ordinary building materials and soil. ALAB-654, 14 NRC at 633 n.5.

[9] In that regard, we observed that exposures to indoor radon concentrations exceed outdoor exposures by, on the average, a factor of 30. See also, n.17, *infra*.

[10] As further appears in that decision, the Licensing Board ultimately attached little, if any weight, to Dr. Kepford's testimony. See 6 NRC at 1224.

Even had a licensing board determined that Dr. Kepford was a qualified expert on the subject at hand, that determination would not have been binding on us.

Not long ago, we explicitly adopted the expert witness standard set forth in Rule 702 of the Federal Rules of Evidence, which speaks in terms of "knowledge, skill, experience, training or education." *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 475 (1982). Applying that standard here, we are compelled to the conclusion that no basis has been provided by the intervenors for a finding that, by experience or education, Dr. Kepford has acquired knowledge or skill sufficient to qualify him as an expert on the health effects question to which his affidavit is assertedly addressed. *Cf. Randolph* v. *Collectramatic, Inc.*, 590 F.2d 844, 848 (10th Cir. 1979); *Ball* v. *E.I. DuPont de Nemours & Co.*, 519 F.2d 715, 718 (6th Cir. 1975). In this connection, when interrogated on *voir dire* in *Perkins*, Dr. Kepford candidly and commendably acknowledged his lack of formal education or experience in medicine, health physics or any other discipline having a perceivable relationship to the ascertainment of the health significance of radioactive emissions. Tr. 2677-78.

B. In addition to intervenors' failure to have qualified Dr. Kepford as an expert on the subject under scrutiny, their submission made no mention of, let alone discussed, the matter of the significance of the amount and distribution of natural background radon. Once again, the record establishes without contradiction that the radon contribution of the uranium fuel cycle is a minute fraction of the radon that is released to the atmosphere from other sources — so minute, indeed, that that contribution is not even detectable.[11] This being so, there is at least room for serious question whether the fuel cycle radon emissions can be taken as, of themselves, having a significant impact upon human health. If anything, the doubt in this regard is reinforced by the equally undisputed fact that those emissions also are vanishingly small when compared to the fluctuations from place to place in the amount of natural radon in the environment. *Perkins* Tr. 2276-77, 2333. See also, United Nations Scientific Committee on the Effects of Atomic Radiation, *Sources and Effects of Ionizing Radiation* 71-74, 80 (Table 30) (1977). For, at least in the absence of a demonstrated marked difference in radon-induced health effects between one geographical area and another, the existence of these fluctuations would appear to negate any theory that the fuel cycle radon increment measurably increases such health hazards as may be attributable to natural background radon.

Intervenors' seemingly deliberate choice to ignore these considerations is all the more surprising in light of the testimony of Dr. Hamilton in the *Perkins* proceeding, to which we made specific reference in ALAB-654. Dr. Hamilton's expert qualifications in the appraisal of radiation health risks are beyond cavil. See p. 1521, *supra*. In *Perkins*, he referred specifically to the "negligible" additional contribution that fuel cycle-related radon emissions make to annual natural background radiation in concluding that those emissions have "a similarly negligible impact on the health effects associated with the fuel cycle." *Ibid.*[12]

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[11] Affidavit of Homer Lowenberg on the Radon Value in Table S-3, fol. *Perkins* Tr. 2369, at p. 3. Although labeled as Mr. Lowenberg's affidavit, in actuality its content was sponsored by, and thus must be deemed the direct testimony of, staff witness Kathleen Black. *Perkins* Tr. 2369.

Given this judgment of an established authority, assuredly the intervenors had a duty to confront it in connection with their insistence that a genuine issue of material fact existed on the health effects question. Stated otherwise, if there exists the contrary judgment of other competent authorities in the field, it was incumbent upon the intervenors to bring it to our attention.

C. There is yet a third reason why it must be concluded that the intervenors have fallen far short of demonstrating the need for a further hearing devoted to the health effects question. It appears from an examination of Dr. Kepford's affidavit that the thesis advanced therein differs in no material respect from the proposition that he put before the *Perkins* Licensing Board several years ago in the capacity of a witness for the intervenors in that proceeding. Kepford, fol. *Perkins* Tr. 2819. Given the fact that the *Perkins* record has been incorporated in the record of this consolidated proceeding, manifestly no useful purpose would be served by a rehearsal of his testimony. In this regard, we need only reemphasize what was said in adopting the "lead case" approach in ALAB-480, *supra:*

> In the circumstances, the *Perkins* record * * * should be sufficient to serve as the base point for the examination of the radon issue in the [now consolidated proceeding]. This is not to say, of course, that every party to each of those proceedings will necessarily concur that that record is satisfactory in every particular. No matter how thorough may have been the treatment of the radon issue in *Perkins*, one or more of the parties to other cases nonetheless may conclude that there were stones left unturned; *i.e.*, that portions of the staff's new analysis were not adequately tested or that there is available evidence bearing upon the issue beyond that presented to the *Perkins* Board. Obviously, nonparticipants in *Perkins* cannot be held bound by the record adduced in that proceeding. At the same time, however, it would be to no party's advantage to insist that the radon issue be relitigated from the starting line in his own case, so long as he were given an opportunity in his proceeding to supplement, contradict, or object to anything in the *Perkins* record. In our view, this is a fair and appropriate procedure.

7 NRC at 804-05.

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[12] Dr. Hamilton also alluded to the vast difference in the natural radon dose received by individuals; a difference attributable to the fluctuations in natural background radon. *Perkins* Tr. 2276, 2278.

In sum, in contrast to the record on the quantity of radon releases, the *Perkins* record on health effects is complete for the purpose of our decision here.[13] Accordingly, we now turn to that record. We must determine whether it warrants a finding that the radon releases associated with fulfilling the uranium fuel requirements of the reactors at bar might tip the NEPA balance against plant operation.

III.

In ALAB-640, we found that the long-term release of radon associated with the 30-year operation of a single 1000 Mw(e) reactor could vary from 630 to 6900 curies per year, according to the circumstances. 13 NRC at 537, 541 (Table 3).[14] But the *Perkins* record establishes without contradiction that the natural release of radon in the United States is from 1 to 2.4 hundred million curies (Ci) per year.[15] Thus, the long-term radon release rate associated with a single reactor stands in relation to natural releases roughly in the range of from one part in 10,000 to one part in 100,000.

Dr. Hamilton testified that exposure to typical radon concentrations in outdoor air results in a dose to the bronchial epithelium (*i.e.*, the cellular lining of the air passages of the lung)[16] of 5 millirads (50 millirem) per year. *Perkins* Tr. 2276.[17]

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[13] The health effects testimony in *Perkins* was, of course, in the context of the radon release rates disclosed by the evidence in that proceeding. As noted in ALAB-654, however, those rates were not materially different from the rates determined in ALAB-640 based upon an expanded record. See p. 1521, *supra*.

Because we are confining our consideration to the *Perkins* record, no weight will be given to the affidavit of Dr. Hamilton which accompanied the *Three Mile Island* applicants' memorandum in response to the intervenors' post-ALAB-654 submission. See p. 1522, *supra*. (The procedures established in ALAB-654 did not provide for a reply by intervenors to that affidavit. We likely would have allowed such a reply either on intervenors' motion or, had one appeared necessary, on our own initiative. On the latter score, the Hamilton affidavit (in common with the Kepford affidavit) does not appear to add anything of real substance to the testimony adduced previously in *Perkins*; rather, Dr. Hamilton's principal aim appeared to be to establish that the conclusions to which he testified in *Perkins* would not be affected by our findings in ALAB-640.)

[14] This range of values is obtained by multiplying the total yearly release of radon per annual fuel requirement (AFR) for each of the three cases of Table 3 by 30 AFRs per reactor lifetime. See 13 NRC at 537. The highest value corresponds to Case 3, which assumes that underground uranium mines are unsealed, open pit mines are unrecovered and mill tailings piles are uncovered.

[15] Gotchy, fol. *Perkins* Tr. 2369, at p. 14.

[16] "Since the observed lung cancers appear to arise primarily in the bronchi near the hilus of the lung, most authors concerned with the dosimetric and radiobiological aspects of the problem assume the relevant biological target to be the basal cells in the bronchial epithelium." Federal Radiation Council, *Report No. 8 (Revised): Guidance for the Control of Radiation Hazards in Uranium Mining* 49 (1967). See also Committee on the Biological Effects of Ionizing Radiation, U.S. National Research Council, *The Effects on Populations of Exposure to Low Levels of Ionizing Radiation: 1980 (BEIR III)* 325-26 (1980).

[17] The source of Dr. Hamilton's 50 millirem per year figure is the UNSCEAR 1977 report, which computes a dose from outdoor radon of 5 millirads per year using a natural outdoor radon concentration of 0.1 picocuries (pCi) per liter and an outdoor occupancy factor of 20 percent. United Nations

(Continued)

Thus, the addition of the radon emissions from a single nuclear plant would cause an increase in the bronchial epithelium dose of from 0.0005 to 0.005 millirem per year.

Dr. Hamilton further testified that the average bronchial epithelium dose due to naturally occurring radon concentrations indoors is 1600 millirem per year, and may vary from 210 to 23,250 millirem per year. *Perkins* Tr. 2276, 2278. Accordingly, in terms of radiation exposure, the radon releases attributable to a single 1000 Mw(e) nuclear power plant (0.005 millirem per year) add less than one part in 100,000 to the average exposure due to natural sources (1650 millirem per year (outdoor plus indoor)).

In the circumstances, it is manifest to us that the fuel cycle contribution to the radon already in the environment — a contribution that, once again, is so slight as to be beyond detection (let alone measurement) — cannot serve to tip the NEPA balance against the operation of any of these three facilities. All that we need or do decide here is that any incremental health risk occasioned by the releases attributable to the fuel cycle is negligible, as Dr. Hamilton concluded. Moreover, that speculative and conjectural risk estimate, to the extent it need be considered under NEPA at all,[18] is acceptable in the sense that it is of insufficient magnitude to alter cost-benefit balances (such as those for the facilities at bar) that otherwise justify the licensing of facility operation.

Only Dr. Kepford expressed a contrary opinion on the radon health effects question. The springboard of his thesis is the premise, also used by the NRC staff in *Perkins*, that low levels of exposure to ionizing radiation cause cancers in at least a linear proportion to the dose received. Proceeding from that premise, Dr. Kepford claims that continuous exposure to the incremental fuel cycle radon emissions will result in significant adverse health effects. For example, according to Dr. Kepford, the long-term release of radon attributable to one of the Perkins reactors will result in approximately 0.16 (*i.e.*, 1/6th) of a fatality per year. Kepford, fol. *Perkins* Tr. 2819, at pp. 2-3 and Table 4 (line 5).[19] By extending his

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Scientific Committee on the Effects of Atomic Radiation, *Sources and Effects of Ionizing Radiation* 74 (1977). (Dr. Hamilton converted millirads to millirem by multiplying by a relative biological effectiveness factor for alpha radiation of 10. *Perkins* Tr. 2276, 2298.) For continuous outdoor exposure the dose would be 250 millirem per year. Using a different publication as a source, a staff witness stated that continuous exposure to an outdoor radon concentration of 0.15 pCi per liter would result in a bronchial epithelium dose of 450 millirem per year. Gotchy, fol. *Perkins* Tr. 2369, at p. 14. This result, adjusted to the same radon concentration used by Dr. Hamilton (*i.e.*, 0.1 pCi per liter), would yield an annual bronchial epithelium dose of 300 millirem.

[18] See, *e.g.*, *Environmental Defense Fund* v. *Hoffman*, 566 F.2d 1060, 1067 (8th Cir. 1977); *Trout Unlimited* v. *Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974).

[19] Dr. Kepford computed fatalities in his testimony for the total assumed radon release as a result of the 30 year operation of the three units of the proposed Perkins facility, each of which had a full-power rating of 1280 Mw(e). We have divided his figures by three to obtain a single-reactor value. Although calculated on a somewhat different basis than that employed in ALAB-640, Dr. Kepford's per-reactor radon release value is in fact quite close to the upper range of the release values we determined in that decision. Compare Kepford, fol. *Perkins* Tr. 2819, at Table 1 with ALAB-640, 13 NRC at 538, 542 (Table 4, Model Light Water Reactor Case 3).

calculations over tens of thousands, hundreds of thousands, millions and even billions of years, Dr. Kepford arrives at his conclusion that radon emissions over these various time intervals will cause extremely large numbers of cancer-induced fatalities. These fatalities, the argument continues, necessarily tip the NEPA cost-benefit balance against operation of each of the reactors in question. But, as Dr. Hamilton pointed out, Dr. Kepford's extrapolations over unrealistic time periods are misleading:

> I think what we're trying to achieve is a reasonable understanding of what the risks are to people using one form of energy compared with another. And we go about this in a generally conservative way, usually taking upper-limit risks just to be sure that we are protecting the public.
>
> But we try to * * * relate these risks in a pretty reasonable perspective. It seems to me the whole basis for presenting these risks is to present them in some reasonable framework.
>
> Now with regard to radon-222 and the question of whether or not and for how many years we should project this risk, it is my view as a physician * * * these long extrapolations into the future of the hazards of radon-222, without any consideration of the framework, the background in which these hazards take place, [are] extremely misleading.
>
> That's why I believe * * * that one should express this increase in radon-222 that one is going to get from the mining and milling in terms of the fractional increase in natural background radiation from radon-222 to which we are all exposed each year of our life from now to a billion years from now * * *.

Hamilton, *Perkins* Tr. 2274-75. See also *Perkins* Tr. 2333.

It follows that if (as Dr. Kepford claims) a reactor's fuel cycle emissions result in approximately 1/6th of a fatality annually, natural radon exposures will cause in excess of 16,000 deaths annually.[20] We cite this comparison because it provides necessary perspective. As it graphically demonstrates, the *incremental* health risk to the population stemming from the fuel cycle emissions (if indeed there is any) is vanishingly small. This is what we understand Dr. Hamilton to have had in mind when, on the basis of the relationship between the fuel cycle releases and natural background radon, he characterized the health effects of the former as "negligible." See p. 1524, *supra*.[21]

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[20] This follows from our determination that, in terms of radon exposure, the radon releases attributable to a nuclear reactor add less than one part in 100,000 to the average exposure due to natural sources. See p. 1527, *supra*.

[21] Although not crucial to the result we reach, it is worthy of passing note that, according to one witness in *Perkins*, the wide disparity in indoor and outdoor natural radon concentrations (see n.9, *supra*) is due in appreciable measure to the choice of building materials (*e.g.*, the use of concrete block or brick in place of wood). Goldman, fol. *Perkins* Tr. 2266, at p. 9. In this regard, it appears that not only brick and block, but such other commonly employed (but not indispensable) construction items as gypsum

(Continued)

In each of the three individual licensing proceedings consolidated for purposes of consideration of the radon issue, all that remained for disposition was that issue.[22] Accordingly, on the basis of the conclusions stated above, we hereby *terminate* our review of the initial decisions in those proceedings. Except to the extent that it may have been previously modified in connection with our review on other issues, each decision is *affirmed*.[23]

It is so ORDERED.

FOR THE APPEAL BOARDS

C. Jean Shoemaker
Secretary to the
Appeal Boards

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wallboard, produce, in the aggregate, radon doses in amounts far exceeding those associated with the uranium fuel cycle. See United Nations Scientific Committee on the Effects of Atomic Radiation, *Sources and Effects of Ionizing Radiation* 77 (1977). Thus, it cannot be said that all significant sources of natural background radon are beyond human control — *i.e.*, in their totality, the health risks of such radon are not always involuntarily assumed.

It also should be noted that there is no current issue regarding the need for the power to be generated by each of the facilities at bar. Accordingly, had the fuel cycle-related emissions been found to pose a significant health risk, it would have become necessary to balance that risk against, *inter alia*, the health risks associated with the generation of electricity by other means.

[22] In *Three Mile Island*, see ALAB-692, 16 NRC 921, 922 n.1 (1982); in *Hope Creek*, see ALAB-518, 9 NRC 14, 41 (1979). Insofar as the Peach Bottom facility is concerned, Unit 3 was still before us in April 1978 when the Commission directed the reconsideration of the radon issue in all pending cases. See ALAB-532, 9 NRC 279 (1979). But the same does not appear to have been true with regard to any proceeding involving Unit 2. For this reason, notwithstanding its inadvertent inclusion in the caption throughout the course of the consolidated proceeding, Unit 2 is not encompassed by this decision.

[23] Although the conclusions reached here are equally applicable to the proceedings before us in which the radon issue was not placed in controversy (see p. 1520, *supra*), we will abide the event of possible Commission review of this decision before taking formal action in those proceedings.

Cite as 16 NRC 1530 (1982) **ALAB-702**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. John H. Buck
Stephen F. Eilperin

In the Matter of **Docket Nos. 50-387-OL**
50-388-OL

PENNSYLVANIA POWER & LIGHT
COMPANY and
ALLEGHENY ELECTRIC COOPERATIVE, INC.
(Susquehanna Steam Electric Station,
Units 1 and 2) **November 22, 1982**

On *sua sponte* review of the Licensing Board's initial decision authorizing the issuance of operating licenses for Units 1 and 2 of this facility (LBP-82-30, 15 NRC 771 (1982)), the Appeal Board agrees with the applicants and NRC staff on the need for amending the technical specifications for Unit 1 to include a limiting condition for operation that restricts increases in unidentified leakage in that Unit's reactor coolant system. Finding no other errors requiring corrective action, the Appeal Board announces the completion of its *sua sponte* review.

MEMORANDUM AND ORDER

In previous orders in this proceeding, we disposed of the parties' appeals from the Licensing Board's April 12, 1982 initial decision (LBP-82-30, 15 NRC 771) authorizing an operating license. First, on September 16 we granted the Commonwealth of Pennsylvania's motion to withdraw its exceptions to the initial decision. We took that step after accepting the settlement agreement proffered to us by the

Commonwealth and the applicants, which settled their dispute involving the quantities and types of dosimetry available for offsite emergency workers. Thereafter in ALAB-693, 16 NRC 952 (1982), we dismissed the appeal of intervenor, Citizens Against Nuclear Dangers (CAND), for failure to brief its exceptions adequately. We noted, however, that the Licensing Board's initial decision would not become final until we completed our pending *sua sponte* review.

In connection with that review, we issued an order on October 26 requesting certain information from the applicants and NRC staff concerning the leak rate monitoring system at Unit 1 of the Susquehanna facility. The order recited the substance of applicants' testimony that the applicants would implement a system to detect increases in unidentified leakage in the reactor coolant system of more than one gallon per minute in any hour, and that the plant would be shut down for inspection in conformance with the technical specifications if a leak rate change of that magnitude were discovered. Our review, however, uncovered no technical specifications for Unit 1 containing a limiting condition of operation addressed to an increase in the rate of unidentified leakage. We therefore requested that the applicants inform us how they intended to implement the leak rate monitoring system discussed at the hearing. In addition, we requested that the staff tell us how and where the Susquehanna technical specifications dealt with this issue and the relationship of the plant's technical specifications to NUREG-0313, Rev. 1, and the agency's standard technical specifications.

The applicants have now informed us that their witness' statement to the Licensing Board at the hearing below regarding the leak detection system "was (and is) incorrect" and that "the error was carried forward in Applicants' proposed findings and the Licensing Board's Initial Decision." Response (Nov. 2, 1982) at 3 (footnotes omitted). The applicants' response then states that the correct answer to the Board's question

> should have stated that the leak detection system is capable of detecting leakages of 1 gpm, that the technical specifications will require plant shutdown for unidentified leakage of 5 gpm, and that the technical specifications will also require plant shutdown if unidentified leakage increases by 2 gpm or more in a four-hour period.

Id. According to the applicants, this answer is consistent with the Final Safety Analysis Report and the staff's recommendations in NUREG-0313, Rev. 1.

The applicants' response also indicates that, although the current technical specifications for Unit 1 include a 5 gpm limit on unidentified leakage and a 25 gpm (averaged over a 24-hour period) limit on the total leakage, the Unit 1 technical specifications do not include any limit on the rate of increase in unidentified leakage. They, however, "recognize that such a limit should be included in order to be consistent with NUREG-0313, Rev. 1, and are now preparing a proposed amendment which would include in the Unit 1 Technical Specifications a limitation on the increase in unidentified reactor coolant system leakage of 2 gpm within a four-hour period." *Id.* at 3-4. The staff's response to our order also indicates the need for an amendment of the Unit 1 technical specifications.

We concur in the need for amending the technical specifications for Unit 1 to include a limiting condition for operation that restricts increases in unidentified leakage to no more than 2 gpm in any four-hour period. Accordingly, the applicants shall inform us when they file their proposed amendment and the staff shall notify us when it acts on the applicants' proposal. We expect both the applicants and the staff to act expeditiously.

This completes our *sua sponte* review. We have reviewed the record and, with the exception of the matter above, have found no other errors requiring corrective action.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

Cite as 16 NRC 1533 (1982) **ALAB-703**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Dr. John H. Buck
Christine N. Kohl

In the Matter of **Docket No. 50-312-SP**

SACRAMENTO MUNICIPAL UTILITY DISTRICT
(Rancho Seco Nuclear Generating Station) **November 23, 1982**

In the course of *sua sponte* review of the Licensing Board's initial decision (LBP-81-12, 13 NRC 557 (1981)) in this special proceeding — instituted to determine the adequacy of certain requirements for continued operation ordered by the Commission following the March 1979 accident at Three Mile Island — the Appeal Board decides upon consideration of additional information submitted by the licensee and the NRC staff that, with one exception, the matters identified in its October 7, 1981 order (ALAB-655, 14 NRC 799) as calling for further information are now satisfactorily clarified or resolved. The Appeal Board defers final ruling in the proceeding, pending consideration of information yet to be received on the remaining matter.

TECHNICAL ISSUES DISCUSSED

Loss-of-coolant (LOCA) analysis;
Pump suction line breaks;
Auxiliary feedwater (AFW) flow;
High pressure injection (HPI) nozzles;
Thermal cycles;

Pressurizer level indication;
Loose thermal sleeves.

MEMORANDUM AND ORDER

This special proceeding was instituted to consider whether certain actions ordered by the Commission in the wake of the March 1979 accident at Three Mile Island were necessary and sufficient to assure that the Rancho Seco facility could safely respond to feedwater transients. The Licensing Board essentially answered that question in the affirmative (see LBP-81-12, 13 NRC 557 (1981)), and no appeals from its initial decision were taken.

Following our *sua sponte* review of the Licensing Board's initial decision, we issued a memorandum and order in which we withheld our final conclusions about the case, pending receipt of further information in several identified areas. See ALAB-655, 14 NRC 799 (1981).[1] We had hoped to receive this information and complete our review quickly. Several factors, however, contributed to delay. Principal among these was the shutdown of the Rancho Seco facility in April 1982 during which cracking in a high pressure injection (HPI) nozzle assembly was discovered. Because one of the matters on which we sought more information concerned the number of thermal cycles that the HPI nozzles can withstand (*id.* at 810-11, 817), the discovery of the cracked nozzle and related problems resulted in our posing still further questions to both licensee and the NRC staff. See Memorandum and Order of April 15, 1982 (unpublished). Responses to those questions were submitted over the next five months. In the meantime, the Rancho Seco facility returned to operation in mid-August, following various repairs to the HPI nozzles and other hardware.[2]

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[1] Specifically, we requested the following information:

1. Status reports from [licensee] SMUD and the staff on the six recommendations in BAW-1564 to enhance AFW [auxiliary feedwater] safety and reliability;
2. Status reports from SMUD and the staff on SMUD's commitments to improve AFW reliability, as described in CEC Exhibit 21 (Enclosure 2);
3. Status reports from SMUD and the staff on the installation of the safety-grade anticipatory reactor trip;
4. Status reports from the staff and SMUD on the need for the additional analyses identified in the Staff Evaluation at 19, 23 [(see 14 NRC at 809)];
5. Staff comments on the March 25, 1981, letter from B&W to SMUD concerning "Reactor Coolant Pump Suction Small Break LOCA";
6. SMUD and staff *schedules* for HPI [high pressure injection] analyses; and
7. Staff clarification of its position on the need *vel non* for extended pressurizer level indication.

14 NRC at 817.

[2] The staff monitored these repairs and authorized the return to operation after concluding in its safety evaluation that licensee's corrective actions were acceptable. We, as well, were satisfied with the nozzle repairs as described to us during an August 13, 1982, conference call with licensee and the staff. See note 6, *infra*.

We have by now received the information originally solicited in ALAB-655 for all but one area. Under item 2, the staff committed to review licensee's revised reliability analysis of proposed modifications to the auxiliary feedwater (AFW) system and to apprise us of its evaluation. See Affidavit of Ernest D. Sylvester (December 4, 1981) at 3, 4. That review is apparently still under way, but we expect to receive the staff's evaluation soon.[3] Of course, until we receive all the material solicited and are satisfied that the gaps we initially perceived in the record have been filled, we cannot reach any final judgment as to the overall adequacy of the Licensing Board's initial decision. We are able at this juncture, however, to summarize our conclusions about the items not relating directly to the improvements proposed for the AFW system.

1. In items 1, 3, and 4, we requested status reports from licensee and the staff on various recommendations or commitments to pursue further action. 14 NRC at 805-06, 808-09, 817. The concern underlying these requests for information was that matters that had assumed enough safety significance during the hearing to provoke licensee's commitment to further consideration might later be overlooked, inadvertently or otherwise. The status reports received from licensee and the staff, however, reflect that adequate attention has been devoted to each item identified in our requests. Further, licensee and the staff are in general agreement as to which additional actions may still be warranted and which are not. No further comment or involvement on our part with respect to items 1, 3, and 4 appears to be necessary.

2. In ALAB-655, we discussed a letter from Babcock and Wilcox (B&W) to licensee concerning the fact that the loss-of-coolant accident (LOCA) analyses relied on in this proceeding did not consider a pump suction line break where AFW flow is delayed. *Id.* at 809-10.[4] Instead, the analyses considered a pump discharge line break and demonstrated that operator actions to start either the AFW flow or the HPI flow within 20 minutes will result in acceptable conditions. The B&W letter noted that it had not been shown whether this 20-minute delay in AFW actuation was acceptable to accommodate the greater rate of coolant loss associated with a pump suction line break. In view of this apparent deficiency in the LOCA analyses, we solicited comments on whether further analyses were necessary before the safety of the Rancho Seco facility can be reasonably assured.

The staff stated in response that it did not regard the failure of the LOCA analyses to include the "pump suction break/delayed AFW" scenario as significant to the continued safe operation of the plant. It concluded that "demonstration of the 20 minutes for operator action is not an absolute requirement since the subject scenarios are outside the design basis for Rancho Seco." Affidavit of Walton L. Jensen, Jr., on Item No. 5 (November 24, 1981) at 3. Because we found the staff's comments not fully responsive and we had become aware of another affidavit on the same matter recently provided to the Licensing Board in the *TMI-1 Restart* proceeding, we sought clarification of the staff's position. Order of January 28, 1982 (unpublished). The staff reaffirmed its view that additional analyses are unnecessary. It based its conclusion on four factors: (a) regardless of the break location, the vessel water level would initially drop to the same approximate elevation; (b) the added loss of primary coolant inventory from a pump suction pipe break would be from water in the cold leg; (c) in the absence of emergency feedwater, the operator has 20 minutes to initiate HPI, regardless of the location of the break in the cold leg piping; and (d) emergency procedures require the operator to initiate HPI immediately, regardless of break location, if a loss of all feedwater has occurred. Affidavit of Walton L. Jensen, Jr. (February 5, 1982), at 2.

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[3] Installation of the AFW system modifications that are the subject of the staff's review is not scheduled until mid-1984. Letter from staff counsel to Appeal Board (October 15, 1982).

[4] The March 25, 1981, letter was not part of the record below but was provided to us by licensee's counsel following issuance of the initial decision.

Although we still find the staff's response somewhat unclear, we agree that analysis of a pump suction line break is not necessary. Admittedly there has been no demonstration that, in fact, the 20-minute period for initiation of AFW flow found acceptable for a pump discharge line break is also acceptable for a suction line break. The time factor, however, assumes less importance in view of post-TMI emergency procedures that now direct the operator to activate HPI *immediately*. Thus, even if further analysis were to show that substantially less time is available to restore feedwater flow following a pump suction line break, immediate actuation of HPI will assure acceptable conditions.

3. A matter that warranted our attention in ALAB-655 was the effect of thermal stress on high pressure injection nozzles and the number of HPI initiation cycles permitted for each nozzle at Rancho Seco. The record and decision below showed that the number of design basis cycles (40) might soon be reached. While we concluded that the Licensing Board's characterization of the design basis limit as " 'overly conservative' " might well be justified, we sought supplementation of the record on this point. Specifically, we asked the staff and licensee to provide "analyses of (1) the maximum allowable number of thermal cycles on the HPI nozzles; (2) methods of detecting thermal cycle effects on the nozzles; (3) possible means of prolonging the useful life of the nozzles; and (4) technical specifications or operating procedures that might reduce the use of the HPI without endangering the core." 14 NRC at 810-11.

In responding to our request, licensee stated that it had reevaluated and increased the design basis limit for HPI cycles and, consequently, that limit is not being approached more quickly than anticipated.[5] It also identified a change in operating procedure designed to reduce the thermal stress on the nozzles. Affidavit of Robert A. Dieterich (December 11, 1981) at 6-3 to 6-4. After receiving licensee's submittal, the staff replied that it would need more time to review it, but indicated that it considered plant operation safe over the near term. Affidavit of Mark L. Padovan (January 5, 1982) at 2. The staff's review led to its own requests for further information from licensee concerning several aspects of the latter's HPI analyses. The staff and licensee thus traded information over the next few months.

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[5] At the outset, we solicited only licensee's and the staff's schedules for performing additional HPI analyses. 14 NRC at 817. Licensee, however, responded with information addressed directly to the four areas of our concern.

In the meantime, cracking in the HPI makeup nozzles was discovered at the Crystal River and Oconee facilities — like Rancho Seco, both B&W plants. Thermal cycling was considered as the possible cause of the cracking. Our concern about the implications of these events for Rancho Seco precipitated our request of the staff for still more information related to thermal stress on HPI nozzles. Memorandum and Order of March 8, 1982 (unpublished). After meeting with the staff, licensee agreed to shut down Rancho Seco for inspection of the nozzles. Ten days after the shutdown, the staff notified us that cracking was found in the makeup nozzle and that its thermal sleeve was missing. The staff speculated that the sleeve could have traveled through the reactor coolant system to the bottom of the reactor vessel, where it might remain trapped. No cracking or missing sleeves were discovered with respect to the three other nozzles, although the sleeve in nozzle B had moved about one inch upstream, apparently as a result of missing or loose weld buttons. Board Notification BN-82-37 (April 13, 1982).

Again, we sought more information from the staff and licensee — this time on the consequences of the movement of the thermal sleeve through the reactor system and the nature of the repairs. Memorandum and Order of April 15, 1982 (unpublished). And again, the staff determined that it would need more information from licensee before it could respond to our questions or conclude that the plant could be safely restarted. Affidavit of John F. Stolz (April 21, 1982) at 2. Licensee complied with the staff's request for further analyses, completed its repairs, and returned the facility to operation in mid-August after receiving staff authorization.[6] The staff later provided us with its final analysis of the maximum allowable number of thermal cycles on the HPI nozzles, concurring with licensee's results. Affidavit of Shou-Nien Hou (September 2, 1982).

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[6] The plant had remained shut down for approximately four months, during which time the thermal sleeves for the makeup nozzle and nozzle B were replaced and unrelated problems concerning excessive hydrogen in the primary coolant system and deformation of the steam generator internal AFW header were resolved. See Board Notification BN-82-41 (April 30, 1982). Our April 15 order had directed licensee to notify us at least three business days before the scheduled return of Rancho Seco to operation. Because we had not yet received the staff's comments on the adequacy of the nozzle repairs at the time licensee notified us of Rancho Seco's imminent restart, we held a conference call with licensee and the staff on August 13, 1982. During the call we discussed, among other things, the thermal sleeve and AFW header repairs and the status of the staff's review of licensee's HPI analysis. Pursuant to our request, both licensee and the staff followed up with letters incorporating the salient points of the conference call. The staff also submitted a safety evaluation report in which it concluded that licensee's corrective actions for the thermal sleeve problem were acceptable.

Now that we have the results of the staff's and licensee's analyses and the nozzle cracking problem appears to be remedied, we can summarize our findings based on this supplementation of the record. As a result of a more analytical evaluation than appeared in the record below (see, *e.g.*, Tr. 2014-15), licensee and the staff agree that the design basis for Rancho Seco includes 70 allowable cycles on each nozzle due to manual HPI initiation; 40 rapid depressurization cycles (automatic HPI); 40 test cycles; and 240 heatup and cooldown cycles. Affidavit of Robert A. Dieterich (December 11, 1981) at 6-4; Affidavit of Shou-Nien Hou (September 2, 1982) at 2; letter from licensee's counsel to Appeal Board (July 8, 1982), Enclosure ("Calculation Data/Transmittal Sheet"). According to the staff, "[a] simplified ratio method was utilized to extrapolate stresses calculated for the rapid depressurization transients as shown in the original stress reports, which was based on the nuclear power piping [ASME] Code B31.7, 1968 draft." Affidavit of Shou-Nien Hou (September 2, 1982) at 2. Despite some earlier misgivings about licensee's calculations (see Affidavit of John F. Stolz (February 25, 1982) at 2), the staff now finds this to be a valid method of estimating stress and has determined that the load combinations used are acceptable. Affidavit of Shou-Nien Hou (September 2, 1982) at 2-3.

The actual number of thermal cycles experienced by each nozzle as of April 1982 is: nozzle A (makeup), 19; nozzle B, 33; nozzle C, 30; and nozzle D, 30. Affidavit of Mark L. Padovan (April 16, 1982) at 2-3.[7] Since the hearing, licensee has changed its operating procedures in order to limit thermal stress. For manual post-trip coolant system volume control, licensee now requires operators to use only the HPI nozzle that is used for system makeup. Thus, because the flow is continuous, the nozzles are not subject to thermal stress upon manual HPI initiation after a reactor trip. Affidavit of Robert A. Dieterich (December 11, 1981) at 6-3. In view of this change in operating procedure and the number of cycles already experienced relative to the reevaluated design basis limits, it no longer appears that "there is a substantial chance that the permitted lifetime number of HPI cycles for each nozzle will soon be reached." 14 NRC at 810. We are therefore satisfied that even if there is some increase in HPI actuations due to the modifications originally ordered by the Commission in this proceeding, it is unlikely to result in diminished effectiveness of the HPI nozzles.[8]

Although our original concern has thus been assuaged, the discovery of cracking in the makeup nozzle and its apparent relationship to a thermal sleeve missing from the same nozzle provide a new object for our attention. The staff has concluded that the design modifications and replacement of the thermal sleeves in two of the four nozzles are acceptable corrective actions, and we have no cause to doubt that assessment. See Affidavit of Mark L. Padovan (August 17, 1982) at 2 and Enclosure (Safety Evaluation Report).[9] Our concern, however, lies with the adequacy of licensee's inspection program *vis-a-vis* the remaining two nozzles (C and D) for which no design changes were made. According to the staff, ultrasonic and liquid penetrant inspections of HPI nozzles to safe-end welds are required only once every ten years. Affidavit of Mark L. Padovan (March 31, 1982) at 3.[10] More frequent inspections of the remaining two original nozzles (already in service six years) might detect missing weld buttons and a loosened sleeve before it has the opportunity to travel through the system — as the sleeve from the makeup nozzle has done already. Licensee has agreed to perform an additional radiographic examination of these two nozzles at the next refueling outage. Letter from licensee's counsel to Appeal Board (August 16, 1982) at 2. We have tentatively concluded, however, that a radiographic inspection of these nozzles should be performed at *each* refueling outage in the future, until they have been replaced or modified in the same manner as nozzles A and B. We recognize that nozzles C and D are not used for continuous system makeup and that they showed no signs of degradation when inspected during the plant's most recent shutdown. Affidavit of Robert A. Dieterich (April 21, 1982) at 4. But we do not regard radiographic examinations at each refueling outage as a significant burden on licensee, given the problems associated with the two other nozzles of the same original design.[11] We will give licensee the opportunity, however, to explain why a license condition incorporating these additional examinations in its inservice inspection program is not warranted. Licensee's comments should be filed with us by December 14, 1982. The staff may reply by December 29, 1982.

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[7] If licensee's repairs (see note 6, *supra*) included replacement of nozzles A and B themselves (rather than just the thermal sleeves), the number of thermal cycles experienced by those two nozzles presumably can now be considered zero.

[8] Despite the agreement of the staff and licensee on the reevaluated design basis number of allowable HPI cycles, it is not clear whether the additional 70 cycles for manual HPI initiation have been incorporated in documents pertinent to the Rancho Seco operating license (*e.g.*, the Final Safety Analysis Report). If not, licensee should take steps to modify these documents to reflect the new evaluation.

4. In its initial decision, the Licensing Board agreed with what it perceived as a staff recommendation for steps to prevent the loss of pressurizer level indication. 13 NRC at 584-85. It thus "direct[ed] the licensee and Staff to proceed directly with plans for" such instrumentation. *Id.* at 586. Because we were uncertain as to the nature of both the staff's position and the Board's "direction" to the parties, we

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[9] The thermal sleeve from the makeup nozzle, thought to be lying at the bottom of the reactor vessel, is to be removed at the next refueling outage (January 1983). Affidavit of Mark L. Padovan (August 17, 1982) at 2.

[10] Until the discovery of cracked nozzles at Oconee and Crystal River focused attention on the matter, no such inspection had been performed yet at Rancho Seco. Affidavit of Mark L. Padovan (March 31, 1982) at 5.

[11] Moreover, licensee's calculations reevaluating the design basis number of allowable thermal cycles for each nozzle appear to assume the presence of a thermal sleeve in each nozzle. See letter from licensee's counsel to Appeal Board (July 8, 1982), Enclosure ("Calculation Data/Transmittal Sheet"). If the presence of an intact sleeve cannot be assured, the reliability of the design basis as reevaluated might be seriously undermined.

asked the staff to clarify whether it believes extended pressurizer level indication is needed at Rancho Seco. 14 NRC at 814-15.

The staff has replied with an affidavit that is still somewhat confusing. It nonetheless unequivocally concludes that extension of the existing pressurizer level indication range is not necessary. Affidavit of Walton L. Jensen, Jr., on Item No. 7 (November 24, 1981) at 3. The staff apparently believes extended pressurizer level indication is not necessary because post-TMI guidelines instruct the operator to rely on a subcooling meter in the control room to monitor primary system inventory. Further, the long-term modifications of the main and auxiliary feedwater system proposed by licensee are designed to keep the pressurizer level on scale after a reactor trip, thus obviating extended level indication. *Id.* at 2-3.

In view of the staff's clarification of its position and licensee's proposed feedwater modifications, we see no need to formalize the Licensing Board's instruction "to proceed directly with plans for extended pressurizer level indication." 13 NRC at 586.

Licensee's comments on the need for additional radiographic inspections of the two unmodified HPI nozzles are due *December 14, 1982*. The staff's reply is due *December 29, 1982*.

Our final ruling in this proceeding is deferred pending receipt of the comments noted above and the staff's evaluation of licensee's revised reliability analysis of proposed modifications to the AFW system.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

Atomic Safety and Licensing Boards Issuances

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Cite as 16 NRC 1541 (1982) LBP-82-99

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H Frye, III, Chairman
Dr. Emmeth A. Luebke
Dr. Oscar H. Paris

In the Matter of

Docket No. 50-142-OL
(Proposed Renewal of
Facility License)

THE REGENTS OF THE UNIVERSITY
OF CALIFORNIA
(UCLA Research Reactor)

November 1, 1982

The Licensing Board rules on a discovery dispute between Intervenor Committee to Bridge the Gap (CBG) and the NRC Staff concerning a disagreement on the scope of discovery to be permitted on the subject of the professional associations of the authors of a study on the Argonaut reactor prepared by the Battelle Memorial Institute for the NRC Staff. The Board orders a response to only those interrogatories which need to be answered in order to assess the professional credibility of one of the consultants. The Board denies as unlikely to lead to admissible evidence CBG's request to order the authors of the study to reply to those questions which seek to probe the consultants' personal acquaintances.

RULES OF PRACTICE: DISQUALIFICATION (DISCOVERY)

A Staff consultant's opinion may not be disqualified on the ground of bias when the views expressed are formed in the course of performing the advisor's proper functions for the agency. *Rombough* v. *Federal Aviation Administration*, 594 F.2d 893, 900 (2d Cir. 1979); *Starr* v. *Federal Aviation Administration*, 589 F.2d 307, 315 (7th Cir. 1978). When the opinion is formed as a result of work performed for an NRC licensee, however, the possibility of bias cannot be automatically dismissed.

MEMORANDUM AND ORDER
(Regarding CBG's Objections to Certain Portions of July 26, 1982 Prehearing Conference Order)

BACKGROUND

During the prehearing conference of June 30, 1982, Committee to Bridge the Gap (CBG) raised a discovery dispute between itself and the NRC Staff. The disagreement concerned the scope of discovery to be permitted on the subject of the professional associations of the authors of the so-called Battelle Study (Analysis of Credible Accidents for Argonaut Reactors, NUREG/CR-2079 PNL-3691). (Tr. 726 *et seq.*) This study was prepared by the Pacific Northwest Laboratory operated by Battelle Memorial Institute. The authors are S. C. Hawley and R. L. Kathren of Pacific Northwest Laboratory and M. A. Robkin of the University of Washington. CBG seeks information concerning the relationships which the authors may have with another Argonaut licensee, the University of Washington, which CBG alleges may have created conflicts of interest leading to a biased study. (Tr. 729.)

During discovery, CBG posed a series of 15 identical interrogatories to Messrs. Hawley, Kathren, and Robkin aimed at eliciting information concerning their association with other Argonaut reactors. In addition, CBG posed 11 more questions on this point to Robkin.

Pursuant to agreement reached at a meeting between CBG and Staff on November 24, 1981, Staff filed a series of responses to the interrogatories on March 17, April 19, and May 10, 1982. Staff believed that its agreement with regard to discovery was satisfied on May 10, 1982. (Tr. 729.) All three individuals answered the 15 identical questions, but Professor Robkin failed to answer the 11 additional questions put to him. CBG now objects that some of the answers were insufficient, and complains of Professor Robkin's failure to answer the additional questions. (Tr. 726-27.)

On July 26, 1982, this Board issued a Prehearing Conference Order which ruled that the Staff did not have to furnish any additional information to CBG with respect to this matter because interrogatories in question were not likely to lead to the discovery of admissible evidence. (Order at 7.) The Board was unwilling to consider conflict of interest considerations where there was no allegation that the authors have any relationship with UCLA or any financial interest in writing a favorable report. (*Id.* at 6-7.) We declined to assume that a scientist's or engineer's professional association with or use of a device so biases his or her professional judgment as to render that judgment suspect. (*Id.* at 7.)

On August 6, 1982, CBG filed objections to certain portions of the Prehearing Conference Order for the purpose of "preserv[ing] those objections for the record." (CBG Objections to Certain Portions of July 26, 1982 Prehearing Conference

Order, August 6, 1982, at 1.) In this document, CBG reasserted its need for further information on the professional associations of the authors of the Battelle Study, particularly Messrs. Robkin and Kathren, whom the Staff does not intend to call as witnesses. (*Id.* at 4-5.) CBG pointed out the fact that the Battelle Study was used as a substitute for an earlier study performed for the Staff by a University of California employee and is currently being relied upon both by Staff and by Applicant. (*Id.* at 2.) It is also troubled by the fact that two of the three researchers are on the payroll of an Argonaut licensee, and the third has close ties to the same licensee. (*Id.*)

In its objection, CBG also raised questions of impropriety concerning a comment which appeared on the record of the Radiation Safety Committee at UCLA on December 15, 1980. Briefly, the comment stated, six months before the Staff position was released, that the Staff would "shift from neutral to support of UCLA" in the spring. (*Id.* at 2.)

On August 13, 1982, the Board issued a letter which informed the parties that it had elected to treat CBG's objections as a motion for reconsideration. Responses were requested by August 23, 1982. Applicant's response was filed on August 20,[1] and Staff's response was filed on August 23.[2] The Applicant took the position that the dispute existed only between CBG and Staff, and concurred in the Board's denial of CBG's request for additional information. (University Response at 2.)

The University agreed with the Board that further inquiry was not likely to lead to admissible evidence, since it cannot be assumed that mere professional association with or use of a particular device so biases professional judgment as to render that judgment suspect. (*Id.* at 1.) Applicant also asserted that no one at UCLA had any advance knowledge of the outcome of the Staff's study of the Argonaut reactor. (*Id.* at 2.)

The Staff argued that its April 19 responses to the CBG interrogatories agreed upon on November 24, 1981, were adequate. (Staff Response at 2, 5.) These responses, Staff asserted, included the professional qualifications of the authors and answers to questions concerning their association with the University of Washington. (*Id.* at 5.) Staff also maintained that the contacts enumerated do not violate the NRC's policies against organizational conflicts of interest. (*Id.* at 8.) Staff reiterated its lack of knowledge of the basis of the comments appearing on the record of the Radiation Safety Committee at UCLA. (*Id.* at 4.)

Although CBG's allegations are insufficient to convince the Board that a conflict of interest exists, we are troubled by inferences which may be drawn from the author's association with an Argonaut licensee and the Applicant's reliance on a study done for the Staff. Based on the information presented, the Board revises its ruling of July 26 to require Professor Robkin to furnish his resume and to answer certain of the questions posed by CBG.

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[1] University Response to CBG Objections to July 26, 1982 Prehearing Conference Order, August 20, 1982.

[2] NRC Staff Response to Intervenor Objections to Board Order, August 23, 1982.

DISCUSSION

CBG has phrased its objections in terms of conflict of interest. We believe, however, that the substance of its complaint goes more to the credibility of the witnesses and the weight to be accorded to the study which they authored. These are clearly appropriate subjects for exploration at a hearing and consequently cannot be eliminated from discovery.

The question thus becomes whether CBG has shown that further discovery on this point is likely to lead to admissible evidence. We have chosen to apply this lesser standard, while recognizing that a higher threshold must be met for discovery against the Staff,[3] because of the background in this proceeding of voluntary discovery pursued by the parties. We do not mean to imply that by engaging in voluntary discovery at the urging of the Board the Staff has waived the more stringent standard. We address the less stringent standard first because we believe it probably comes closer to that which the Staff and CBG have put into practice during their negotiations, and second because that is the standard the Staff has raised in its objections. (Tr. 728, Staff Response at 5.)

In order to judge whether CBG's questions are likely to lead to the discovery of admissible evidence, we must first look at the specific questions, answers, and objections in issue.

The specific questions with the answers which CBG regards as insufficient are the following:

Question C(1) addresses to Robkin:

> Please provide a current c.v. or resume and indicate in addition any other technical qualifications upon which you base your expertise as to the matters addressed in the report in question.

Professor Robkin answered:

> I am a Professor of Nuclear Engineering and a Professor of Environmental Health on the faculty of the University of Washington (U.W.), Seattle, Washington. A statement of my professional qualifications is attached to this affidavit.

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[3] Discovery against the Staff is governed by special provisions. 10 CFR §2.744 limits documentary discovery against the Staff to items not reasonably obtainable from other sources. *Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 NRC 317, 323 (1980). Interrogatories may be addressed to the Staff only "where the information is necessary to a proper decision in the case and not obtainable elsewhere." 10 CFR §2.720(h)(2)(ii), *Id.*

However, unlike Hawley and Kathren, who also furnished statements of professional qualifications and resumes, Robkin did not furnish a resume. Staff has not indicated why.

We believe that a request for a resume from one of the authors of a study which is clearly the subject of admitted contentions is not unreasonable. Staff should supply CBG with Professor Robkin's resume.

Question B(3) addressed to Kathren:

> Do you now, or have you within the last five years, received a paycheck from any of the five current Argonaut reactor licensees? If so, please explain.

Kathren answered by referring to his answer to Question B(2), which stated:

> Affiliate Assistant Professor Radiological Sciences, University of Washington, Joint Center for Graduate Study, Richland, 1978 to date; Coordinator in Radiological Sciences, Joint Center for Graduate Study, Richland, 1980 to date. Have also given occasional lectures/seminars at the University of Washington, Seattle, in Radiological Sciences and Environmental Health classes and have taught continuing education classes through Joint Center for Graduate Study, Richland.

CBG objects that this does not constitute an explicit answer to the question (Tr. 735.) Explicitness aside, it is an adequate answer. CBG is well aware that the University of Washington is an Argonaut licensee. CBG's objection is overruled.

Questions B(4) and C(4), addressed to Kathren and Robkin, asked:

> Do you have personal acquaintance with any of the current or past staff of the reactor facilities at any of the five Argonaut facilities? If so, please identify each such individual and describe the nature of the acquaintance.

Kathren answered:

> My professional acquaintances and associations are many, and I am unaware of the specific background experience of each nor am I cognizant of the current or past staff of the five Argonaut facilities. Needless to say, I am acquainted with some members of the staff at the University of Washington Argonaut reactor. If specific names of interest are provided, I will endeavor to accurately identify the nature of my association with each.

Robkin answered:

> I have acquaintance with the staff of the U.W. reactor. I have known all of the staff since we are in the same Department and since I have taught classes which utilized the reactor. These staff members include Mr. W. P. Miller, Associate Director for Reactor Operations; Mr. DeLoss L. Fry, Assistant Director for Facilities Engineering; Mr. Astor G. Rask, Chief Electronics Engineer; and Professor W. S. Chalk, Director of the Nuclear Reactor Laboratory. In each case, the relationship has been a professional one.

CBG asserts a need to follow up, particularly with regard to Kathren's answer. We fail to see any relevance to this inquiry. One's personal acquaintances simply do not impinge on one's scientific or engineering credibility. CBG's objections are overruled.

We now consider the additional questions posed to Professor Robkin which he did not answer. CBG asserts the need for answers to seven of the total of 11 questions (Tr. 737.) These seven questions are:

> C(17) Do you teach any courses which utilize the U of W Argonaut? If so, please specify which classes, what use the reactor is put to, and how many hours per year roughly of reactor time you so use.
>
> C(18) Have you in the past taught any classes that use the reactor: Please give details.
>
> C(19) Do you now, or have you in the past, used the U of W reactor for any research, neutron activation, or other non-teaching activity? If so, please detail with specificity the uses to which you have put the reactor, the research you have conducted with it, and roughly the hours of reactor use so involved.
>
> C(21) Do you have colleagues at the University of Washington who use the reactor for teaching or research or other activities? If possible, please identify colleagues who are principal users and the use put.
>
> C(22) Do you now, or have you in the past, sat on any supervisorial committee for the U of W reactor (reactor hazards committee, etc.)? If so, please detail said involvement.
>
> C(23) Are you personally acquainted with any members of said supervisorial committees; if so, in what capacity?
>
> C(24) Were the University of Washington reactor shut down, would any of your research or teaching activities have to be modified or curtailed? If so, please specify what activities would have to be altered and how. If not, please specify precisely why no alteration would be needed.

As we stated earlier, those questions which seek to probe the personal acquaintances of Professor Robkin need not be answered in order to assess his professional credibility. There is no need to inquire into the activities of Professor Robkin's colleagues. Thus, questions C(21) and C(23) need not be answered.

Professor Robkin's own relationship with the Argonaut reactor, on the other hand, raises questions as to his ability to impartially evaluate its merits. The degree to which his work is associated with the reactor should be disclosed more fully in order to assess the impact a negative evaluation might have on him. The Board therefore directs Professor Robkin to answer questions C(17), C(18), C(19), C(22) and C(24).

As we stated in our Order of July 26, 1982, CBG asks us to assume that a scientist's or engineer's professional association with or use of a device so biases his or her professional judgment as to render that judgment suspect. (Order at 7.)

We decline to make this assumption. The Board recognizes that the sources to be drawn upon for the most expert and competent evaluation of complex technology are those who are most familiar with that technology. It is often true that those with sufficient knowledge of the technology to perform an evaluation are somehow connected with its development and/or use. This is not fatal to the objectivity of the study.

Questions of conflict of interest or bias resulting from professional interests have arisen most frequently in the context of challenges aimed directly at the decisionmaker. The import of the professional associations of a Licensing Board member on his ability to render an unbiased decision was addressed early in the history of the Licensing Board Panel. (*Long Island Lighting Company* (Shoreham Nuclear Power Station, Unit 1), ALAB-12, 4 AEC 413 (1970).) In *Shoreham*, the Appeal Board rejected the Lloyd Harbor Study Group's request that two of the Board's members be disqualified for bias because of professional affiliations with, respectively, an industrial corporation and the engineering department of a university. In its ruling, the Appeal Board set forth the Commission's policy regarding such conflicts:

> . . . [W]e fail to see the basis for the Study Group's presumed conclusion that private affiliation in an area involving nuclear activity is, necessarily, a disqualifying factor. . . . [T]he experience which comes from private involvement in the nuclear field has, with good reason, not been considered a disabling circumstance. . . . This is a long-established and well-known course on the part of the Commission and has as its sound objectives the utilization in the licensing review process of "technical experts with extensive experience in industrial and academic nuclear programs." *Id.* at 414-15 (footnote omitted).

Indeed, this conclusion was reached by the Congress when it enacted §191 of the Atomic Energy Act. That provision specifically authorizes the Commission to appoint Board members from private life. In commenting on this provision in its report, the Joint Committee on Atomic Energy stated that "[i]t is expected that the two technically qualified members [of a board] will be persons of recognized caliber and stature in the nuclear field." (Senate Report No. 1677, July 5, 1962; 1962 U.S. Code Cong. & Adm. News 2207 at 2211.) Clearly Congress did not intend that professional experience in the nuclear field should be deemed to disqualify one from service on a board. Consequently that experience cannot be deemed to constitute a disqualifying conflict of interest for a staff consultant.

Nor is this conclusion unique to the Commission. The standard for objective agency decisionmaking in NEPA cases was articulated by the Eighth Circuit in *Environmental Defense Fund* v. *Corps of Engineers of the United States Army*, 470 F.2d 289 (8th Cir. 1972). The test is one of good faith objectivity, rather than subjective impartiality. *Id.* at 296; *accord, Carolina Environmental Study Group* v. *United States*, 510 F.2d 796, 801 (D.C. Cir. 1975).

However, a problem arises with respect to credibility when the associations that give rise to this expertise are of such a nature that an impartial decision may not be possible. Where the use of a device is integral to a consultant's job, an unfavorable evaluation of the device may have devastating personal consequences. The consultant may not then be able to make an objective study of that device.

In the present situation, we are specifically concerned with the opinions expressed by Prof. Robkin on the safety of the Argonaut reactor. Prof. Robkin submitted a report which, after editing, was incorporated as the "Graphite Fire" section of the Battelle study. (Response to interrogatory C8.) The Battelle study constitutes the Staff's principal analysis of the safety of the Argonaut reactor. Even more, UCLA has now substituted it for its own hazards analysis. Prof. Robkin is a Professor of Nuclear Engineering and Chairman of the Radiation Safety Committee at the University of Washington. (Maurice A. Robkin — Professional Qualifications, response to interrogatory C2.) He has utilized the University of Washington Argonaut for some of his classes. (Response to interrogatory C4.) His connections with the Argonaut reactor are more than passing. Further assurance may well be required that these connections are sufficiently attenuated from the work done for the NRC Staff to satisfy the requirement of good faith objectivity.

The cases provide limited guidance on what constitutes bias on the part of a Staff consultant, rather than a decisionmaker. At least two circuits seem to have adopted the idea that bias is not shown if the views expressed are formed in the course of performing the advisor's proper functions for the agency. *Rombough* v. *Federal Aviation Administration*, 594 F.2d 893, 900 (2d Cir. 1979); *Starr* v. *Federal Aviation Administration*, 589 F.2d 307, 315 (7th Cir. 1978) (refusal to disqualify Federal Air Surgeon from decisionmaking regarding rule requiring commercial pilots to retire at age 60, although he had participated in preparation of a position paper that opposed relaxation of the rule). Here the possibility has been raised that the authors of the Battelle study have formed a bias concerning the Argonaut reactor which results from their use of that machine for a Commission licensee, rather than from the performance of review functions for the Staff. Under the teaching of these cases, this possibility cannot be dismissed at the outset as having no relevance to this proceeding.

We do not now rule that the authors of the Battelle Study have formed biased views of the UCLA Argonaut reactor through their work with a similar reactor. However, we do agree with CBG that this possibility may not be dismissed at the threshold and that CBG is entitled to more information on that possibility.

In reaching this result, we assume that, as the Staff has suggested, the contract awarded has passed muster under the NRC's contracts review process. The agency has promulgated formal rules dealing with organizational conflicts of interest under Section 170A of the Atomic Energy Act of 1954, as amended. (42 USC Section 2210a(b).) These rules can be found at 41 CFR Part 20. As the Staff points out, the fact that an entity may work both for the NRC and for a licensee is not, in itself, a conflict of interest. (Staff Response at 10.) If the work being done for the regulated party does not bear any necessary technical relationship to the work requested by the NRC, a conflict of interest does not result for purposes of awarding a contract. (*Id.* at 11.) Nevertheless, the fact that the contract has passed muster under 41 CFR Part 20 does not necessarily preclude allegations with regard to bias on the part of individuals who performed the contract.

We now turn our attention to CBG's allegation of Staff impropriety concerning the comment appearing in the record of the Radiation Safety Committee at UCLA on December 15, 1980, to the effect that the Staff would support UCLA's application. This matter was disposed of at the Prehearing Conference of June 30, 1982, where the Staff asserted that it had no knowledge about why the comment was written. (Tr. 743.) Further inquiry to the Staff on this matter will not yield different information.

ORDER

In consideration of the foregoing, it is this 1st day of November, 1982, ORDERED

that Professor Robkin shall respond to CBG interrogatories C17, C18, C19, C22 and C24, and shall further respond to interrogatory C1 by furnishing a copy of his resume.

THE ATOMIC SAFETY AND
LICENSING BOARD

John H Frye, III, Chairman
ADMINISTRATIVE JUDGE

Emmeth A. Luebke
ADMINISTRATIVE JUDGE

Oscar H. Paris
ADMINISTRATIVE JUDGE

Bethesda, Maryland
November 1, 1982

Cite as 16 NRC 1550 (1982) LBP-82-100

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman
Dr. Walter H. Jordan
Dr. Harry Foreman

In the Matter of

Docket No. 50-382-OL

LOUISIANA POWER AND LIGHT COMPANY
(Waterford Steam Electric Station,
Unit 3)

November 3, 1982

The Licensing Board issues its first of two partial initial decisions on the application for an operating license for the Waterford Steam Electric Station, Unit 3. The Board commends to the Commission the Board's discussion of unresolved generic safety issue A-45, Shutdown Decay Heat Removal.

OPERATING LICENSE HEARINGS: ISSUES FOR CONSIDERATION

At the operating license stage, a licensing board passes only upon contested matters; however, it has the residual power to delve *sua sponte* into any serious matter which has not been put into issue by a party. Once an operating license board has resolved any contested issues as well as any issues raised *sua sponte*, the decision as to all other matters which need to be considered prior to the issuance of the operating license is the responsibility of the NRC Staff and it alone.

LICENSING BOARDS: CONSIDERATION OF GENERIC ISSUES (SAFETY)

A licensing board must refrain from scrutinizing the substance of particular explanations in the SER justifying operation of a plant prior to the resolution of an unresolved generic safety issue. The Board should only look to see whether the generic issue has been taken into account in a manner that is at least plausible and that, if proven to be of substance, would be adequate to justify operation. *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978).

LICENSING BOARDS: CONSIDERATION OF GENERIC ISSUES (SAFETY); *SUA SPONTE* REVIEW

It would be inappropriate for a licensing board to solicit evidence to resolve definitively an unresolved generic safety issue assessed by the NRC Staff, when the issue is also being actively pursued by Advisory Committee on Reactor Safeguards. *Cf. Cincinnati Gas and Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), CLI-82-20, 16 NRC 109 (1982).

EMERGENCY PLANS

There is no standard for judging the adequacy of evacuation routes; nor has a minimum evacuation time been set. However, estimates are required of the amount of time needed to evacuate the entire population within the plume exposure EPZ over the presently existing roads. Since such estimates form the basis for protective action decisions, the estimates must be reasonably reliable.

EMERGENCY PLANS

Emergency planning is a continuous process, and a licensing board's findings are predictive. If plans are sufficiently detailed and concrete to provide a licensing board reasonable assurance that they can and will be implemented in the event of an emergency, then implementation of details can properly be overseen by the NRC Staff.

EMERGENCY PLANS

10 CFR Part 50, App. E., §F.1 requires a periodic full-scale exercise which tests as much of the emergency plans as is reasonably achievable without mandatory

public participation. This section precludes a licensing board from requiring public evacuation during an exercise.

EMERGENCY PLANS

Other protective measures, such as sheltering and administration of radioprotective drugs, do not obviate plans for timely evacuation of special populations.

RULES OF PRACTICE: POST-HEARING RESOLUTION OF ISSUES

License conditions that require only a purely objective determination are appropriate for post-hearing ministerial resolution by the NRC Staff; reopening the record is not warranted.

NEPA: SCOPE OF ENVIRONMENTAL ANALYSIS

Synergistic effects are exceedingly unlikely to occur at the very low levels of radiation calculated to result from releases of gaseous and liquid effluents during normal plant operation. Further, even if synergistic effects did occur, they would be so small as to be clinically undetectable. Therefore, Applicant and the NRC Staff did not err in failing to assess synergistic effects. NEPA's requirement that environmental effects of a proposed agency action be described is subject to a rule of reason. An agency need not foresee the unforeseeable. *Scientists' Institute for Public Information* v. *Atomic Energy Commission*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

RULES OF PRACTICE: AMENDMENT OF FES

The environmental statement may be deemed amended *pro tanto* to include our findings and conclusions. *Allied-General Nuclear Services, et al.* (Barnwell Nuclear Fuel Plant Separations Facility), ALAB-296, 2 NRC 671 (1975); 10 CFR §51.52(b)(3).

TECHNICAL ISSUES DISCUSSED

1. Consideration of generic safety questions in the safety evaluation report.
    a. Shutdown decay heat removal.
    b. Seismic qualification of equipment.

2. Emergency plans.
    a. Evacuation plans.
    b. Protective measures — radioprotective drugs (potassium iodide).
3. Synergism
    a. Low-level radiation releases.
    b. Multiplicative interaction of low-level radiation and chemical carcinogens.

APPEARANCES

[redacted] **Bruce W. Churchill, Esq., Ernest L. Blake, Jr., Esq., James B. Hamlin, Esq.,** and **Delissa A. Ridgway, Esq.,** for the Applicant

Sherwin E. Turk, Esq., and **Geary S. Mizuno, Esq.,** for the United States Nuclear Regulatory Commission

Brian P. Cassidy, Esq., for the Federal Emergency Management Agency

Luke B. Fontana, Esq., and **Gary L. Groesch** for the Joint Intervenors, Save Our Wetlands, Inc. and Oystershell Alliance

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PARTIAL INITIAL DECISION
(Operating License)

OPINION

I. INTRODUCTION

A. Background and Scope of Decision

This is the first of two partial initial decisions on the application for an operating license for the Waterford Steam Electric Station, Unit 3.

On November 14, 1974, the Nuclear Regulatory Commission had issued a permit to Louisiana Power and Light Company (Applicant) to construct the Waterford 3 nuclear generating station. This facility is located on the west bank of the Mississippi, about 24 miles west of New Orleans, Louisiana. In September 1978, Applicant applied for an operating license. Three organizations sought intervention and a hearing: Save Our Wetlands, Inc. and Oystershell Alliance (the Joint Intervenors), and Louisiana Consumers' League, Inc. The Louisiana Consumers' League later withdrew from the proceedings.

Sixteen contentions advanced by Joint Intervenors were approved by this Board. Of these sixteen contentions, all but two were either withdrawn or dismissed pursuant to motions for summary disposition. The remaining two issues, Joint Intervenors' Contentions 8/9 on synergism and 17/26(1) and (2) on emergency planning, were tried in an evidentiary hearing during March, April, and May of 1982.

After the close of the hearings, we reviewed the record. With respect to Joint Intervenors' Contention 17/26(1)(a), which challenged the provisions in the emergency plans for notifying residents of evacuation procedures, we found the record to be inadequate. The emergency planning brochure that allegedly would satisfy the public information requirements of the NRC's emergency planning regulations (10 CFR §50.47(b)(7)) had not yet been drafted at the time of the hearings and was not submitted into evidence. We concluded that Applicant's bald assertion that the brochure would be drafted and would be submitted to the NRC Staff for review was not sufficient to permit us to resolve Joint Intervenors' contention.

Accordingly, in a Memorandum and Order dated August 17, 1982 (LBP-82-66, 16 NRC 730), we reopened the record and directed that Applicant submit as an exhibit its brochure. We also requested that the parties comment on Applicant's submittal and indicate whether further testimony and cross examination would be required. After reviewing the brochure that Applicant submitted, Staff, the Federal Emergency Management Agency (FEMA) and the Joint Intervenors submitted comments. Joint Intervenors' comments, in the form of affidavits, asserted among other things that the brochure would not be readily comprehensible to a person of only average education. Joint Intervenors requested that further evidentiary hearings be held. Applicant responded, requesting, *inter alia*, that it be permitted to submit a revised brochure to meet these comments. It agreed that an evidentiary hearing would be the most expedient method of resolving this issue. Thereafter, in a Memorandum and Order of October 18, 1982 (unpublished), we ordered further hearing on Contention 17/26(1)(a), and our decision upon the adequacy of the revised brochure will be the subject of a second partial initial decision after completion of that hearing. All other contentions and matters are addressed and decided herein.

B. Content of Opinion and Findings

The Board's Findings of Fact and Conclusions of Law are appended and are incorporated herein by reference. An Order is also appended.

In Part III of this Opinion, we discuss and resolve Joint Intervenors' contention on synergism and their contention on emergency planning, except for subpart 17/26(1)(a) which addresses provisions for notifying the public of evacuation procedures. Our underlying factual findings with respect to these controverted issues are set forth in Section II of the appended Findings of Fact. At this, the operating license stage of the proceeding, we pass only upon these contested matters. While we have the residual power to delve into any serious matter, even if no party has put it in issue, we have determined that there were no serious matters which we should raise *sua sponte*, and thus, the decision as to all other matters which need be considered prior to the issuance of this operating license has been the responsibility of the NRC Staff and it alone.[1]

However, in Part II of this Opinion, we do discuss two uncontested matters which, as required by decisions of the Appeal Board, we must consider. In that discussion, we recommend to the Commission that an in-depth assessment of the reliability of the Waterford 3 shutdown heat removal system be made by an independent laboratory.

In issuing this partial initial decision, we leave unresolved a motion by Joint Intervenors to reopen hearings and a petition by the State of Louisiana to intervene, both of which seek to raise Table S-3 issues.[2] The motion and petition were prompted by *NRDC* v. *NRC*, 685 F.2d 459 (D.C. Cir. 1982), which would invalidate Table S-3. However, the mandate of that case has not been issued, and we have deferred our rulings on these requests.[3] We await guidance in the form of a Commission Policy Statement.

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[1] 10 CFR §§2.104(c), 2.760a; 10 CFR Part 2, Appendix A, VIII(b); *Consolidated Edison Company of New York, Inc.* (Indian Point, Units 1, 2 & 3), ALAB-319, 3 NRC 188 (1976).

[2] *See* 10 CFR §51.20(e), which establishes Table S-3 as the data base to be used in evaluating the environmental effects of the uranium fuel cycle.

Finally, it should be noted that all of the proposed findings of fact and conclusions of law submitted by the parties, other than those addressing Contention 17/26(1)(a), that are not incorporated directly or inferentially in this partial initial decision are rejected as unsupported in law or fact or as unnecessary to the rendering of this partial initial decision.

II. UNCONTESTED ISSUES

A. Unresolved Generic Safety Issues

In its Safety Evaluation Report (Staff Ex. 2, Appendix C), the Staff identified thirteen unresolved generic safety issues applicable to Waterford 3, in order to comply with the decision in *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978). After evaluating these issues in the SER and in Supplement 1 (Staff Ex. 3), the Staff concluded with respect to eleven of them that the facility could (or there is reasonable assurance that the facility could) be operated before these issues were resolved without undue risk to the health and safety of the public. We have reviewed and are satisfied with the Staff's evaluations and conclusions with respect to these eleven issues. We were not satisfied, however, with Staff's treatment of the remaining two issues, Shutdown Decay Heat Removal (A-45) and Seismic Qualification of Equipment (A-46).

1. Shutdown Decay Heat Removal (A-45)

In Appendix C to the SER, the Staff concluded that Waterford 3 could be operated safely prior to resolution of the issue of whether an alternative means of decay heat removal should be required in plant design. The Staff based its decision upon the capability of the steam generators to transfer heat to the main or auxiliary feedwater systems, and upon the capability of the high pressure injection system (HPIS) to add coolant at high pressure to the primary system while energy from heat decay is removed by releasing pressure through power-operated relief valves (PORVs) or safety valves. This latter method of decay heat removal is known as "feed and bleed"; however, the Waterford 3 plant design does not include PORVs, the HPIS cannot inject at the safety valve pressure, and hence Waterford 3 has no feed and bleed capability.

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[3] On September 1, 1982, the Court of Appeals for the D.C. Circuit granted a stay of mandate, and on September 27, 1982, a petition for certiorari in *NRDC* v. *NRC* was filed with the Supreme Court. Thus, there has been no final disposition of the case.

This Board had previously raised the need for feed and bleed capability as a *sua sponte* question. We withdrew the issue, not because we were convinced that the question did not represent a serious safety matter, but because we were satisfied that the need for feed and bleed capability would be explored on a generic basis by the Staff and the Advisory Committee on Reactor Safeguards (ACRS).[4] (Memorandum and Order of April 27, 1982, at 2).

In reaching that decision, we examined and found unconvincing the arguments proffered by Applicant and endorsed by the Staff that the reliability of the feedwater systems obviated the need for feed and bleed capability.[5] Similarly, in Supplement 3 to the SER (Staff Ex. 5), the Staff requested an analysis of the need for depressurization valves (*Id.* at 5-2) and required Applicant to provide justification for interim safe operation of the plant.

Therefore, in a Memorandum and Order of August 12, 1982, we found that the Staff's conclusion that Waterford 3 could be operated safely pending resolution of generic issue A-45 was without basis, because Waterford 3 has no feed and bleed capability and the SER provided no support for relying solely on the steam generator/feedwater system to remove decay heat. Accordingly, in our August 12 Memorandum and Order, we requested that the Staff provide us in affidavit form a detailed explanation justifying operation or interim operation of Waterford 3 prior to the resolution of A-45. In accordance with our request, the Staff submitted its affidavit to us on August 27, 1982.[6] In the affidavit, the Staff admitted that the justification provided in the SER was inapplicable to Waterford 3.

However, according to the Staff, interim operation of Waterford 3, prior to resolution of A-45, is justified because (1) the heat removal systems have been upgraded to meet post-TMI-2 requirements and (2) the Emergency Feedwater System (EFWS) is highly reliable and hence meets current NRC requirements (Staff Ex. 9, at 4). The Staff's affidavit references its earlier estimate of the probability of a core meltdown due to failure of shutdown decay heat removal capability (5×10^{-6} per reactor-year). *See* note 5, *supra*. Nevertheless, we have seen no claim by the Staff that the Waterford 3 heat removal systems are more reliable than those of other PWRs, which have feed and bleed back-up.

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[4] The ACRS concern for the safety of System 80 nuclear plants manufactured by Combustion Engineering, Inc., was expressed in their letter, ACRS Report on Final Design Approval for Combustion Engineering, Inc., Standard Nuclear Steam Supply System (Standard Reference System 80) (Dec. 15, 1981). ACRS noted the extra importance of the reliability of the auxiliary feedwater system in System 80 plants for heat removal following shutdown. They suggested that further consideration be given to adding pressure relief valves to allow more direct methods of decay heat removal.

[5] The Staff had submitted affidavits purporting to show that the risk of a core meltdown due to failure to remove shutdown heat was about 5×10^{-6} per reactor year. Affidavit of Lobel, Sheron, and Thadani, concerning Feed and Bleed and Emergency Feedwater System Reliability (April 12, 1982). However, we had serious misgivings about Staff's rejection of Licensee Event Report data in arriving at its reliability estimates. (Memorandum and Order of April 27, 1982, at 3-5.)

[6] Affidavit of Clifford J. Anderson and Chu-Yu Liang, concerning Unresolved Generic Safety Issue A-45 (August 27, 1982), admitted into evidence as Staff Ex. 9 in an Order dated October 19, 1982.

Although both Applicant and Joint Intervenors were invited to comment on Staff's affidavit, only Applicant did so. Applicant's response included a copy of the justification it had supplied the Staff, a document entitled "A Review of Depressurization and Decay Removal Capabilities at Waterford 3."[7] In this justification, Applicant listed five considerations.[8] These five considerations, however, were essentially the same as those previously supplied to ACRS by Combustion Engineering, Inc.,[9] and again stressed the reliability of the feedwater systems and steam generators. In response to CE's previous recital of these five considerations, ACRS noted that the high reliability of the feedwater system and the integrity of the steam generators were necessary goals, but difficult to achieve. The ACRS therefore requested further evaluation, although it did not suggest a condition on the operation of system 80 plants pending resolution of the issue.

The bottom line of Staff's and Applicant's justification for interim operation prior to the resolution of A-45 is that the EFWS is so reliable that no other method of shutdown decay heat removal is necessary. We must review this justification in accordance with the Appeal Board's guidance in *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978). We are prevented by that opinion from "scrutiny of the substance of particular explanations." Rather, we are only to look "to see whether the generic safety issues have been taken into account in a manner that is at least plausible and that, *if proven to be of substance*, would be adequate to justify operation." *Id.* at 249 n.7 (emphasis added). Our role, therefore, is similar to appellate review; we cannot substitute our judgment for that of the Staff. Therefore, we find ourselves in the uncomfortable position of being required to accept a justification of which we are personally skeptical. However, even if we were permitted to substitute our judgment for the Staff's, we would be unable to assess definitively Staff's and Applicant's justification without receiving evidence on the issue, and, because of the involvement of ACRS, we feel that an attempt on our part to obtain the evidence necessary to resolve this issue would be violative of the Commission's recent decision in *Cincinnati Gas and Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), CLI-82-20, 16 NRC 109 (1982).

Accordingly, with great reluctance we accept Staff's justification. However, we bring this issue to the attention of the Commission and urge that an in-depth assessment of the reliability of the Waterford 3 shutdown decay heat removal system be made by an independent laboratory, such as Sandia National Laboratory.

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[7] Applicant's Response of September 10, 1982, admitted into evidence as Applicant's Exhibit 11 in the Order dated October 19, 1982.

[8] The five considerations are 1) the reliability of the EFWS, 2) that Waterford 3 can achieve a cold shutdown using only safety grade systems, 3) the reliability of Waterford 3's steam generators, 4) the possibility of heat removal by depressurizing the steam generators and using the low head condensate pumps, and 5) that probabilistic analyses do not justify the addition of Reactor Coolant System valves.

[9] *See* ACRS, Reliability of the Shutdown Heat Removal System on the System 80 Design (April 5, 1982).

2. *Seismic Qualification of Equipment (A-46)*

With respect to Seismic Qualification of Equipment (A-46), the Staff reported in the SER and its supplements (Staff Exs. 3, 4, and 5) that this issue had not yet been resolved. Therefore in our Memorandum and Order of August 12, 1982, in which we requested affidavits justifying interim operation pending the resolution of A-45, Shutdown Decay Heat Removal, we also requested an affidavit justifying interim operation pending the resolution of A-46.

After our receipt of the Staff's affidavit,[10] it became apparent that the Staff's reference to A-46 in the SER was an improvident use of boilerplate. A-46 addressed whether safety equipment in plants designed against former criteria should be backfitted to comply with current criteria. Waterford 3, however, is being reviewed against and must meet the current criteria, and thus A-46 is inapplicable as an unresolved generic safety issue in the instant case (Staff Ex 10).[11]

III. CONTENTIONS

A. Emergency Planning[12]

1. *Evacuation Time Estimate and Adequacy of Roads (Fdgs. 8-19)*

Joint Intervenors' Contention 17/26(1)(b) alleges that the roads and highways necessary for evacuation of residents within the 10-mile Emergency Planning Zone (EPZ) are inadequate. As required by NRC regulation, the Applicant has conducted a computer-based study which estimates the time required to evacuate the 10-mile EPZ over the presently available roads. Under favorable weather conditions, evacuation would take five hours and fifteen minutes; under unfavorable conditions, the evacuation would take seven hours and thirty minutes. Waterford is about average with respect to other plants. Both FEMA and the NRC Staff have reviewed the time estimates and agree that the figures are reasonable.

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[10] Affidavit of Tsun-Yung Chang, concerning Unresolved Generic Safety Issue A-46 (August 27, 1982), admitted into evidence as Staff Exhibit 10 in the Order dated October 19, 1982.

[11] The requisite number of copies of Staff Exhibits 9 and 10 and of Applicant's Exhibit 11 have been forwarded by the Board to the reporter for marking and filing in the record of this case, which has been reopened by us for this limited purpose.

[12] The Joint Intervenors did not present direct evidence upon Contention 17/26(1) on evacuation, or 17/26(2) relating to potassium iodide.

No contrary evidence was presented, although some of the assumptions were questioned by the Joint Intervenors.

The evacuation time estimates are for use by emergency response officials who are charged with recommending and deciding on protective actions during an emergency. Evacuation, as a protective action, would be called for when it would result in dose savings to the population. There is no standard for judging the adequacy of the evacuation routes, nor has a minimum evacuation time been set. Under some accident scenarios, evacuation could reduce the dose to the population; under other situations, such as sudden release of radioactivity, evacuation may not be effective. Additional roads and highways would reduce the time for evacuation, but there is no requirement that such roads be built for that reason. There are therefore no criteria for deciding whether "the roads and highways necessary for such evacuation are inadequate."

Although there are no criteria for judging the adequacy of evacuation routes, estimates are required of the amount of time needed to evacuate the entire population within the plume exposure EPZ over the presently existing roads. Since such estimates form the basis for protective action decisions, the estimates must be reasonably reliable, neither too short nor too long. The Joint Intervenors have alleged that the estimates are deficient in four respects, and although such allegations are not precisely covered by the contention, they are relevant and we allowed cross-examination.[13] We therefore proceed to address those alleged deficiencies.

Refusal to Evacuate

The Joint Intervenors cited an instance in which some residents refused to evacuate following a potential chemical spill and argue that the Parish plans are deficient in failing to demonstrate adequate resources to forcibly evict persons who refuse to evacuate. Absent evidence to the contrary, we are persuaded by the expert opinion of the Civil Defense Director of St. Charles Parish that only a few individuals would disregard an evacuation order following a nuclear accident, and therefore there would be no diversion of Parish resources (*i.e.*, personnel and equipment).

Additional Collisions

Joint Intervenors argue that during a general evacuation there will be an increased number of vehicular accidents on the roads which will lead to clogging of the routes. They base their arguments on the testimony of the Parish Civil Defense Directors who predicted that there would be an increase in accident rates because drivers would be in a hurry to escape. However, this was contradicted by Applicant's witness on evacuation studies who testified that the past experience with large-scale evacuation showed that there were very few serious accidents because traffic moves slowly, and that damaged cars can be moved out of the way. We give gre[redacted]t to the evidence based on past experience that traffic accidents will not lead to clogging of the evacuation routes. Further, the plans do provide for clearing the roads of stalled cars. We find no deficiency in the time estimate study.

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[13] The Intervenors' Proposed Findings and Memoranda include the alleged four "omissions" under their Contention 17/26(1)(b) and Contention 17/26(1)(f). We believe the so-called omissions are only relevant to the adequacy of roads and highways and so we address them at this point.

Hysteria

The Board recognized that excessive anxiety on the part of the public could result in an overreaction and possible disruption of the plans for protective action.[14] It would most likely take the form of spontaneous evacuation by people, inside or outside the 10-mile EPZ, even though their evacuation was not called for. The emergency plans do not specifically address hysteria; nor did FEMA take hysteria into account in their evaluation of the plans. However, both FEMA's and the Staff's testimony demonstrate that the planning criteria of NUREG-O654/FEMA REP-1 (Rev. 1), "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" are designed to provide orderly, safe evacuation and thereby minimize hysterical reactions and potential chaos. Furthermore, past experience has demonstrated that, although there will be some hysteria and spontaneous evacuation, these reactions will not interfere with the evacuation scheme. We conclude that public overreaction to a nuclear accident is likely to be minimized provided the guidance in NUREG-0654 is followed, and we conclude that no additional measures need be taken to cope with the public's anxiety.

Single Mode Evacuation

Joint Intervenors assert that the Parish plans are defective in that they inflexibly call for "single mode evacuation" for each Parish; St. Charles Parish residents evacuate to the east, while St. John the Baptist residents go west in the event of an accident. They allege that, while there are good alternative routes so that St. Charles could opt to evacuate to the west and St. John could opt to evacuate to the east, this single evacuation plan was arbitrarily selected to prevent the confusion that would result from the two Parishes evacuating in the same direction and was not selected in order to effect dose savings. They complain that, under certain conditions (*e.g.*, adverse prevailing winds), residents would be exposed to excessive radiation if they were arbitrarily required to evacuate in a single direction. However, maps in the Parish Plans show that residents in some sectors of the two Parishes will evacuate in directions other than strictly east or west. Moreover, the plans are not fixed in concrete. Depending upon conditions existing at the time, the Parish Civil Defense Directors could and would decide to evacuate in various directions other than strictly to the east or west.

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[14] The Board chose the term "anxiety"; however, most of the witnesses spoke of "fears," "hysteria" and "panic."

We conclude, therefore, that Applicant's evacuation time study demonstrates a reasonable evacuation time estimate, and we reject Joint Intervenors' allegations of four deficiencies in this estimate and in the evacuation scheme.

2. *Evacuation Warning System (Fdgs. 20-40)*

Joint Intervenors' Contention 17/26(1)(c) alleges that the Evacuation Warning System in Applicant's Emergency Plan is inadequate.

a. *The Siren System*

The record reveals a well-developed evacuation warning system. The primary component of the system is a network of fixed sirens designed to meet the NRC and FEMA criteria. The siren network is complemented by mobile units whose function is to warn transients in recreational wetlands in the EPZ. In addition, the plan contains provisions for direct notification of the major industrial concerns in the area, and provisions to contact persons with hearing impairments.

Implementation of this plan is not yet complete; the sirens are not yet installed, and means for contacting particular persons or groups are still being formulated. This is not a defect in the plan. Emergency Planning is a continuous process, and our findings are predictive. We are satisfied that, pursuant to 10 CFR §50.47(a), the plans are sufficiently detailed and concrete to provide us with reasonable assurances that they can and will be implemented in the event of an emergency. In addition, the plans must be completed and fully exercised before the NRC Staff can authorize full-power operation. 10 CFR Part 50, App. E, §F.1.b.; 10 CFR §50.47. The implementation of details, such as the completion of a list of hearing-impaired individuals and specification of means to contact them, can properly be overseen by the Staff. However, in line with what has been done in St. John the Baptist Parish, we do suggest that the list of major industries to be contacted in the St. Charles Parish Plan be amended to include the telephone number of each such industry.

b. The Emergency Messages

The transmission of emergency information is also part of the evacuation warning system.

The Louisiana Nuclear Energy Division (LNED) and the Parishes of St. Charles and of St. John the Baptist have drafted emergency messages for broadcast in the event of an emergency. These messages include specific evacuation instructions — the location of reception centers, specified evacuation routes, and instructions for meeting children evacuated directly from schools. The messages are kept on file by the Louisiana Office of Emergency Preparedness (LOEP) for broadcast over the State's Emergency Broadcast System. Provisions have also been made for the broadcast of the messages over local radio and cable TV stations. Joint Intervenors have not pointed out any deficiency in the evacuation scheme or in the method of disseminating the information. Except for the absence of information upon pick-up points for persons without transportation, the emergency public information scheme complies with the applicable regulatory requirements, and there is reasonable assurance that the scheme can be implemented in a radiological emergency. The informational deficiency noted above is dealt with in our discussion of Contention 17/26(1)(f), *infra.*

3. Command Decision Structure (Fdgs. 41-52)

Joint Intervenors' Contention 17/26(1)(d) alleges that the command decision structure, including appropriate guidance, is inadequate for commencing evacuation.

Any threat to safety at Waterford 3 is first recognized by the Plant's Operation Shift Supervisor. At that time, he assumes the duties of Emergency Coordinator. He alerts the Plant Manager Nuclear, who will become Emergency Coordinator if the situation so requires. The Emergency Coordinator assesses the emergency and notifies the State agencies, LNED and LOEP, and the two Parishes adjacent to the plant, St. Charles and St. John the Baptist. The information transmitted to the State agencies and the Parishes via the operational hotline includes the class of the emergency, information concerning the actual or projected releases of radioactivity, and recommended protective measures.

Upon receipt of the initial notification from the utility, the Parishes implement the notification and mobilization procedures for Parish personnel and resources as determined by the class of emergency. Each Parish activates its Emergency Operations Center (EOC) and maintains continuous communications with the plant and State agencies.

LNED activates its operational headquarters and makes an independent assessment of the accident based upon information received from the plant and from the LNED field monitoring team. LNED disseminates information to the State EOC, activated by LOEP, and to the Parishes. LNED also makes a protective action recommendation which is forwarded to the Assistant Secretary of Environmental Affairs (ASOEA), for evaluation. Upon the decision of ASOEA, LNED notifies the Parishes of the State's protective action recommendation.

Each Parish EOC is manned by a staff of responsible Parish officials and a representative of the utility. This staff will assist the Parish chief executive in making the final decision as to protective actions. The Parish will implement protective actions based on local conditions and will take into account State and plant recommendations.

Both the NRC Staff and FEMA have reviewed the emergency plans, off-site and on-site, and have found that, but for certain minor deficiencies which the Applicant has committed to correct, they conform with Commission regulations and guides. Except for the failure of the Parish Plans to designate by title the LP&L official at the EOF who will have the authority or responsibility to provide protective action recommendations to off-site authorities, we do not believe that these minor deficiencies have an important bearing on the adequacy of the command structure. We have reviewed all of the testimony, exhibits, and cross-examination and conclude that the command structure is adequate for commencing evacuation or other suitable protective actions, subject to the designation by title in the Parish Plans of the LP&L official at the EOF who will have the authority or responsibility to provide protective action recommendations to off-site authorities.

4. Evacuation Drills (Fdgs. 53-58)

Joint Intervenors' Contention 17/26(1)(e) alleges that emergency preparedness exercises will be inadequate, because provisions for moving individuals will not be actually tested.[15]

10 CFR Part 50, App. E, §F.1 requires a periodic full-scale exercise which tests as much of the emergency plans as is reasonably achievable *without mandatory public participation*. Applicant's and the State's plans for emergency preparedness exercises are in accordance with this provision, and appear reasonably calculated to test their logistical capabilities. Applicant has, therefore, demonstrated compliance with the regulations, and this fact is uncontroverted by Joint Intervenors. Moreover, we believe that 10 CFR Part 50, App. E, §F.1 expressly precludes our requiring public evacuation during an exercise.

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[15] In their Proposed Findings of Fact and Conclusions of Law, Joint Intervenors address an alleged need for actual public evacuation; they do not address the adequacy of the plan to test the logistics needed for an evacuation (*i.e.*, whether buses, ambulances, etc., will be mobilized during an exercise) and did not do so during the hearings. Accordingly, we interpret the contention as one concerning solely the necessity for actual public evacuation during an exercise. Joint Intervenors also assert in their Proposed Findings that exercises should be unannounced. This assertion clearly exceeds the scope of the contention and will not be addressed.

5. *Transportation for Special Persons (Fdgs. 59-81)*

Joint Intervenors' Contention 17/26(1)(f) alleges that there are inadequate provisions made for the evacuation of persons without vehicles, school children, the aged or crippled, the sick and the hospitalized, prisoners, and transient workers.

Joint Intervenors' proposed findings of fact to a great extent addressed problems of evacuation in general, and not problems in evacuating the particular classes of persons identified in the contention.[16]

The record establishes that the Parish Plans do address the special needs of classes of persons described in the contention. The plan identifies these groups, determines the number of persons in each and the resources needed to evacuate them, and, except for prisoners, establishes the actual details of evacuation. Responsibility for each portion of the plan is clearly delineated.

To date, however, the Parishes lack sufficient resources to implement the plan. There are sufficient vehicles in neighboring parishes to permit implementation of the plan; the exact number of vehicles needed has been established and all that is needed are letters of agreement with support parishes to ensure that the vehicles and drivers can and will be provided if needed. Accordingly, we condition issuance of the operating license on completion of the letters of agreement and submittal of these letters to the NRC Staff.

In addition, we are disturbed by the lack of adequate plans for the evacuation of prisoners. Indeed, that the Parish plans consider other protective measures, such as sheltering and protective drugs, in lieu of timely evacuation for this special population heightens our concern. We do not believe that these other measures should obviate plans for timely evacuation. Therefore, we condition the issuance of the operating license on commitment and designation by the Parishes of the vehicles and personnel necessary for timely evacuation of the Parish prison populations.

The Parish Plans should be amended to specify the vehicles that have been allotted to evacuate the prisoners. These vehicles should have a combined capacity to evacuate the prison population. The Plans should also specify the personnel commitment for drivers and guards. Finally, the Plans should clearly indicate that the personnel designated as drivers or guards will have no other emergency duties and the allotted vehicles will have no other emergency function until after prisoner evacuation is accomplished.

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[16] Joint Intervenors' Findings of Fact address four "omissions" in the plan, the failure to consider refusal to evacuate, additional collisions on the highways during an evacuation, hysteria, and the inadequacy of "single mode evacuation." Proposed Opinion and Findings of Fact of Joint Intervenors, 9-13 (June 19, 1982). These issues were clearly not raised by Contention 17/26(1)(f), and were not the subject of any direct testimony. However, these issues are relevant to the adequacy of roads and highways for evacuation and are discussed, *supra*, with respect to Contention 17/26(1)(b).

Finally, this Board also conditions the operating license upon inclusion of pick-up point information in the EBS evacuation message. Although Applicant testified that broadcast of this information is contemplated, the information is not part of the evacuation message contained in the Parish Plans. We do not believe that there can be an adequate evacuation of persons who do not have a means of transportation unless clear instructions to those persons are given at the time evacuation is ordered.

The problems we have resolved above by imposing license conditions do not require a reopening of the record. They require only a purely objective determination and are appropriate for post-hearing ministerial resolution by the Staff.

6. *Potassium Iodide (Fdgs. 82-98)*

Joint Intervenors' Contention 17/26(2) alleges that Applicant's emergency plan failed to provide adequately for the distribution and/or storage of potassium iodide (KI) in readily accessible locations for the protection of individuals against thyroid irradiation.

Radioactive isotopes of iodine that are inhaled or ingested accumulate in the thyroid where they can lead to local radiation damage and cancers. Iodine-131 (radioiodine) is the most significant of the radioisotopes that are released during a reactor incident. There are a variety of chemical substances that block the accumulation of radioiodine in the thyroid. Of these, potassium iodide is purportedly the most suitable. However, administration of KI prior to exposure of radioiodine is required to obtain maximum protection from the effects of the exposure.

Joint Intervenors did not present direct evidence in support of this contention. Applicant, however, demonstrated that there are risks and problems associated with the predistribution and use of KI as an optional protective action for the general public. Predistribution of KI to the general public would preclude responsible control of the time and manner of the administration of the drug. Controlled conditions, such as temperature, moisture, and light, are required to maintain optimum potency of the drug. Predistribution might give the public a false sense of security because merely the taking of the drug may not be a sufficient protective action. In addition, Staff demonstrated that both FEMA and the Food and Drug Administration (FDA) consider the decision to dispense KI to be the prerogative of the State. While it is conceivable that comprehensive Federal guidance, applicable to all operating reactors, may at some point in the future recommend the administration of KI to the general public in an emergency, there clearly is no current "accepted public health practice" providing for KI use by the general public.

After weighing factors such as the risks of adverse and allergic reactions and side effects, the logistical problems of KI administration, and the availability of other protective action options, the Board concludes that the State of Louisiana's public health policy decision not to provide KI to the general public is reasonable and is not inconsistent with the guidance provided by FEMA and the NRC.

B. Synergism (Fdgs. 99-111)

In Contention 8/9, Joint Intervenors allege that evaluation of possible synergistic or cumulative effects between radiation and chemical carcinogens should have been considered, but were not.[17] Their concern is with radioactive releases from the normal operation of the plant. They believe that the introduction of this radiation to a region through which passes a heavily contaminated river will enhance the risk of deleterious health effects, particularly cancer, to the population.

The Radiation Hazard

In support of their contention the Joint Intervenors raised a number of points. They claim that both the Applicant and the Staff erred in their calculations of the levels of both the liquid and gaseous radioactive effluents that will be released from the plant during normal operations and that the estimated average dose level of 0.01 mrem per year to individuals living in the vicinity of the plant is much too low.

The challenge to the calculations stems from claims that inaccurate rates of release of radioactive effluents were postulated and that incorrect rates of uptakes of isotopes by soil, by plants, and by animals were used, resulting in the development of inaccurate source terms. The Joint Intervenors base their allegation on what they perceived to be large discrepancies between estimates of expected releases from Waterford and those actually experienced in operating plants. They base their claim on a table, prepared by one of their witnesses from data appearing in the published literature, of radioactive releases from five operating plants. Further, they believe the calculated doses to the public are too low because inappropriate inhalation and ingestion exposure pathway models were used. They claim also that current state-of-the-art dosimeters do not truly measure tissue dose. They recommend a biological dosimeter, tradescantia, as providing an accurate measure of tissue dosage, in that such dosimeters reflect radiation effects on nuclei of individual cells.

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[17] This contention uses the term "cumulative effects." Very little of the testimony, however, discussed cumulative effects of chemical carcinogens and radiation. (*See* Jt. Inters.' testimony, fol. Tr. 1342, at 5-8.) No specific definition was given, and we therefore apply the term as it is normally used. Health effects are cumulative if they increase with each added insult or injury. With respect to radiation, the health effects increase linearly.

When this definition is applied to Contention 8/9, the reason for the dearth of testimony on cumlative effects becomes apparent. If the combined impact of radiation and chemicals is additive, as defined above, then the contribution from radiation is all that must be evaluated. The component of the combined impact that is the result of exposure to chemical carcinogens will exist whether or not Waterford 3 is operated and is therefore the background to which radiation effects must be added. These radiation effects have been treated in the FES, Appendix I rulemaking record, and BEIR reports. Accordingly, we afford no separate treatment to cumulative effects.

After full consideration of the testimony, the Board believes the skepticism of Joint Intervenors' witnesses as to accuracy and validity of the techniques employed and of the findings developed from them is not well founded. No witness for the Joint Intervenors was familiar with the actual methodology Staff or Applicant used or with any other methodology. Absent a constructive critique of the methodologies, we must accept as valid the established models and projections of Staff and Applicant. Joint Intervenors' skepticism is simply not sufficient to refute Staff's and Applicant's testimony. Moreover, we discount Joint Intervenors' witness's table as a valid basis for his skepticism; cross-examination of the witness discredited the table's accuracy and applicability. For example, the witness was not sure if the figures on the table were releases from single-unit reactors, whether the reactors were similar to Waterford 3, or even whether the figures on the table were actual, measured releases or were mere projections.

The Board accepts the Staff's and Applicant's calculations on the levels of release of radioactive effluents from the plant and the dose calculations derived therefrom. The estimates of both parties are very close to each other. The release estimates were based on the design of Waterford 3's equipment and the characteristics of the plant site's meterology, hydrology, and geology. Calculation of the releases demonstrates compliance with NRC's regulatory limits in Appendix I to 10 CFR Part 50. Evaluation of the doses and the effect of the releases are based on commonly accepted methodology and risk functions for low levels of radiation. The Board agrees that the impact will be very small.

The Environmental Pollution Hazard

Further in support of their contention, the Joint Intervenors presented testimony to the effect that there is a larger burden of exposure to chemicals through air and drinking water to the population living along the Mississippi River corridor between Baton Rouge and New Orleans than in many other areas of the country and that this is especially true for persons occupationally exposed in plants along the river. They state that the rates of cancer for people living along the lower Mississippi River are significantly higher than the national average, particularly for respiratory, urinary tract, and pancreatic cancer, and that epidemiological studies have linked the high cancer rates to heavy chemical pollutant exposure through drinking water obtained from the Mississippi, from employment in ship building and chemical industries, and from residence near the petroleum refineries. The Joint Intervenors point out that neither the Applicant nor the Staff had considered the contribution of chemical environment pollutants in their evaluation of the potential health hazards from siting the plant in the southern Mississippi corridor.

The view of the Board is that the Joint Intervenors are correct in their assessment that neither the Staff nor the Applicant had considered the role of chemical environmental pollutants in their consideration of the potential health hazards associated with the normal operation of the Waterford plant. The Board concurs that there are elevated rates for some types of cancer in southeastern Louisiana over other regions of the U.S., and it is possible that the elevation of cancer rates is caused by chemical carcinogenic environmental pollutants. One would be hard put to refute that some of the cancer incidence in the region may be attributable to existing carcinogenic agents in environmental pollutants in the area. However, in view of the ambiguity expressed in the literature, the Board believes that further work is necessary to firmly establish a causal relationship between environmental pollution and cancer induction in southeastern Louisiana, as attractive as that hypothesis is for explaining the high rates of cancer there. More important though in the context of this hearing is that there is no evidence that the concentration of existing pollutants in the area, proven or suspected to be carcinogens, is sufficient to support synergism, assuming requisite levels of radioactivity will be present and that synergism in fact occurs in such a milieu.

The Multiplicative Hazard

The Joint Intervenors' contention concerning potential deleterious health effects of radioactive releases asssociated with the normal operation of Waterford 3 is not a challenge to Appendix I, but rather is a concern about cumulative and/or synergistic effects of the radioactive releases and chemical carcinogens which already exist due to the high concentrations of industry in the immediately adjoining area.

The results of a number of studies were put into the record and demonstrated that synergism exists between certain chemicals and ionizing radiation in the induction of cancer in animals. These effects, however, were demonstrated at radiation doses and dose rates many orders of magnitude greater than background radiation. No evidence of synergism between low-level radiation (at or even approaching the very low levels of radiation to be emitted from the Waterford plant) and chemical carcinogens was presented. Further, none of the studies suggested a relationship for extrapolating from high radiation levels, where effects have been observed, to the extremely low levels of radiation at issue here. Certainly there is no convincing evidence in this record to that effect, although witnesses were repeatedly asked about this by the Board. It was largely this gap in the evidence that prevented us from accepting Joint Intervenors' witnesses' opinion that synergism would occur. But even if we were to assume that multiplicative effects do occur at the very low doses of radiation under consideration, then the cancer incidence statistics presented must necessarily include any synergistic interactions that might have occurred between the environmental carcinogens in southeastern Louisiana and the natural background radiation levels. It is estimated Waterford 3 will add an average of only about 0.01 mrem per year to the 80 mrem per year background radiation. Such a minute addition to existing radiation levels could have only a correspondingly minute additional effect and would not measurably increase any synergistic interactions that might be already occurring in the environment. Furthermore, the radiation released by Waterford 3 will even be smaller than the variation in natural background radiation from place to place in the area around the plant. As a result, any additional synergistic effects caused by radiation released from Waterford 3 will be correspondingly even smaller than those induced by such local variations in natural background radiation and completely undetectable, if they occur at all.[18]

The Board concludes that synergistic effects are exceedingly unlikely to occur at the very low levels of radiation calculated to result from the releases of gaseous and liquid radioactive effluents from Waterford 3 during normal plant operation. Further, even if synergistic effects did occur, they would be so small as to be clinically undetectable.

Accordingly, the Board finds that Applicant and Staff did not err in failing to assess synergistic effects.[19] Nevertheless, the environmental statement may be deemed amended *pro tanto* to include our findings and conclusion.[20]

IV. CONCLUSION

The Board concludes, on the basis of all the testimony and exhibits in the record, that subject to conditions discussed in this Opinion and imposed in the Order, *infra:* 1) the roads and highways are adequate for evacuation purposes; 2) the evacuation warning system is adequate; 3) the command decision structure is adequate; 4) the planned exercises are adequate and need not include actual evacuations; 5) the plans for evacuating special classes of persons are adequate; 6) the emergency plans are not inadequate in not providing for the storage and/or distribution of potassium iodide to the public; and 7) Applicant and Staff did not err in not assessing synergistic effects, and such effects, if they occur at all, are insignificant.

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[18] Although lack of detectability does not necessarily translate into no effect, the fact that naturally occurring variables alone are sufficient to mask any effect that occurs is indicative of negligible impact. *See, e.g., Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-78-19, 7 NRC 989, 1026 (1978); *Philadelphia Electric Company, et al.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-640, 13 NRC 487, 547 (1981) (Opinion of Judges Buck and Johnson dissenting with respect to Part VI B).

[19] NEPA's requirement that environmental effects of a proposed agency action be described is subject to a rule of reason. An agency need not foresee the unforseeable. *Scientists' Institute for Public Infomation* v. *Atomic Energy Commission*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

[20] *Allied-General Nuclear Services, et al.* (Barnwell Nuclear Fuel Plant Separations Facility), ALAB-296, 2 NRC 671 (1975); 10 CFR §51.52(b)(3).

In addition, the Board concludes that the unresolved generic safety issues have been taken into account in a manner that is at least plausible and that, if proven to be of substance, would be adequate to justify operation. However, with respect to unresolved generic safety issue A-45, Shutdown Decay Heat Removal, we do so with misgivings. We commend our discussion of this issue to the Commission and urge that an in-depth assessment of the reliability of the Waterford 3 Shutdown Decay Heat Removal System be made by an independent laboratory.

All other matters not discussed in the Opinion other than yet-undecided contention 17/26(1)(a), were considered and found either to be without merit or not to affect the outcome of our decision.

FINDINGS OF FACT

I. BACKGROUND

1. This initial decision involves the Application filed in September 1978 by Louisiana Power and Light Company (Applicant) for a license to operate the Waterford Steam Electric Station, Unit 3. Previously, on November 14, 1974, the Nuclear Regulatory Commission (NRC) had issued the Construction Permit. On January 2, 1979, the NRC published a *Federal Register* Notice of "Receipt of Application for Facility Operating License; Availability of Applicant's Environmental Report; Consideration of Issuance of Facility Operating License; and Opportunity for Hearing" (44 *Fed. Reg.* 125).

2. Waterford 3 is located on the west bank of the Mississippi River, in St. Charles Parish, Louisiana, between the towns of Killona and Taft, about 24 miles west of New Orleans (Staff Ex. 2, p. 2-1). This plant will utilize a nuclear steam supply system manufactured by Combustion Engineering Corp. and consisting of a pressurized water reactor (PWR), a pressurizer, two steam generators, four coolant pumps, and piping required to connect these components. The nuclear steam supply system is enclosed in a steel containment vessel and a surrounding concrete shield building. Steam from the steam generators will drive a turbogenerator having a net output of approximately 1150 MW of electric energy[21] (*Id.*, at 1-3, 1-4).

3. This Licensing Board admitted as party-intervenors Save Our Wetlands, Inc. and Oystershell Alliance (the Joint Intervenors), and Louisiana Consumers' League, Inc. (Order of September 13, 1979). Prior to the hearing, Louisiana Consumers' League withdrew its contentions and withdrew as a party (Order of

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[21] The latest information as of August, 1982 is that fuel loading is scheduled for May, 1983, and that the scheduled commercial operation date has been deferred until January, 1984.

November 13, 1981). Ultimately, two of the Joint Intervenors' contentions remained to be tried — Contention 8/9, regarding synergism, and Contentions 17/26(1) and 17/26(2), regarding emergency plannig.[22]

4. Limited appearance statements by members of the public were taken during the initial hearing sessions. Evidentiary hearings on the synergism contention were held on March 24-26, 29-31, April 1-2, and May 10-11, 1982. The hearings on the emergency planning issues were held on May 3-7, 11-12. A Federal Emergency Management Agency (FEMA) attorney appeared and participated during the emergency planning sessions.

5. On June 11, 1982, Applicant filed its proposed findings of fact, conclusions of law and brief. The Joint Intervenors filed their proposed findings, conclusions of law and trial memoranda on June 19, 1982. Staff's proposed findings and conclusions of law, and brief were submitted on July 15th. Applicant filed replies on July 26, 1982.

6. Upon our review we found the record inadequate with respect to Joint Intervenors' Contention 17/26(1)(a) which reads as follows:

> Applicant has failed to adequately make provision, according to the Emergency Plan contained in Chapter 13.3 of the FSAR, for evacuation of individuals located within the 10-mile plume exposure pathway emergency planning zone for the Waterford 3 site in the event of a serious reactor incident, as required by applicable NRC regulations, in that:[23]

a)the provisions for notifying residents of evacuation procedures are inadequate.

Applicant's brochure to satisfy the public information requirements of the Commission's emergency planning regulations (10 CFR §50.47(b)(7)) had not been drafted at the time of the hearing and was not offered into evidence. Accordingly, in a Memorandum and Order of August 17, 1982 (LBP-82-66, 16 NRC 730), the Board reopened the record, directed that Applicant submit as an exhibit its brochure, and requested that the parties comment on the brochure and indicate whether further testimony and cross-examination would be necessary. After reviewing Applicant's submission, the Staff and FEMA furnished comments. Joint Intervenors submitted affidavits which asserted, *inter alia*, that the brochure would not be readily comprehensible to a person of only average education. Joint Intervenors requested that further evidentiary hearings be held. Applicant responded, requesting *inter alia* that it be permitted to submit a revised brochure to meet these comments. Applicant agreed that a hearing would be the most expedient method of resolving the issue. In a Memorandum and Order of October 18,

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[22] Prior to the hearing, two of Joint Intervenors' contentions had been dismissed pursuant to summary disposition procedures (Memorandum and Order of September 30, 1981 (unpublished), and that of October 20, 1981) (LBP-81-48, 14 NRC 877). Joint Intervenors had also withdrawn eleven of their contentions prior to the hearing (Order of November 13, 1981).

[23] This introductory wording of Contention 17/26(1) will not be reiterated *infra* with respect to subparts (b) through (f).

1982, we ordered a further hearing on Contention 17/26(1)(a) with respect to the adequacy of Applicants' revised brochure.

II. ISSUES IN CONTROVERSY[24]

A. Emergency Planning[25]

7. 10 CFR §50.47(a) on Emergency Plans provides that no operating license will be issued unless there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. This determination, as applied to the off-site emergency plan, is based on the Federal Emergency Management Agency (FEMA)) review of the adequacy of the state and local emergency plans and on the existence of reasonable assurance that they can be implemented. The FEMA findings are presumed to be correct (*Id.*).

1. Evacuation Time Estimate and Adequacy of Roads

Joint Intervenors' Contention 17/26(1)(b) alleges: . . . the roads and highways necessary for such evacuation are inadequate.

8. Section IV of Appendix E to 10 CFR 50 requires that:

> The nuclear power reactor operating license applicant shall also provide an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and for permanent populations.

9. The methodology for preparation of the evacuation time estimates is specified in Appendix 4 to NUREG-0654/FEMA REP-1 (Rev. 1), "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

10. The evacuation time estimates are for use by emergency response personnel charged with recommending and deciding on protective action during an emergency. The time estimates provide emergency response decisionmakers with information on which to base a decision as to the feasibility of evacuation under the actual conditions (Staff testimony, fol. Tr. 2743, at 6; Appl's. testimony, fol. Tr. 2224, at 4).

11. Applicant submitted an evacuation time estimate study "Evacuation Time Estimate, Waterford Steam Electric Station, Unit No. 3, Rev. 1" (Appl's. Ex. 4).

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[24] In numerous instances the Joint Intervenors' proposed findings cited and relied upon extra-record material. It is clear that the Board may not base a decision on factual material which has not been introduced into evidence. *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB 463, 7 NRC 341, 352 (1978). Further, many of those proposed findings improperly presented reargument in excepting to various rulings made by the Board during the evidentiary hearing.

[25] Joint Intervenors did not present direct evidence upon this Contention, 17/26(1) and (2).

The methodology for the study utilizes a mathematical simulation model, which predicts the flow of traffic on the roadway system around Waterford 3, and was based on population estimates for 1982 within the 10-mile Emergency Planning Zone (EPZ). The estimated time to evacuate the entire 10-mile area was five hours and fifteen minutes under clear weather conditions, and seven hours and thirty minutes under adverse weather conditions (*Id.* at Table 1). These time estimates place Waterford 3 approximately in the middle relative to other nuclear power plants (Tr. 2780).

12. The NRC Staff has reviewed the Applicant's evacuation time estimate study and has concluded that it is responsive to and is in compliance with NUREG-0654 (Staff testimony, fol. Tr. 2743, at 5). The Staff has made independent calculations which agree reasonably well with the Applicant's (*Id.*). FEMA officials have observed the road network in the vicinity of Waterford 3, have interviewed the Civil Defense (CD) Directors for the risk parishes, and have considered the comments of the Regional Assistance Committee member from the Federal Highway Administration as well as the Applicant's evacuation time estimate study. They conclude that the roads are adequate for evacuation purposes (FEMA testimony, fol. Tr. 2864, at 5, 6).

13. The CD Directors for the risk parishes agree that the evacuation time estimates over the present roadways are reasonable (Appl's. testimony, fol. Tr. 2243, at pp. 10-11; Appl's. testimony, fol. Tr. 2246, at 6). However, both Directors would like to see additional roads and lowered evacuation time (Tr. 2996; Tr. 2997).

14. What is meant by "adequate" evacuation routes has not been defined. Neither the Commission regulations nor NUREG-0654 require that any particular evacuation route capacity exist as part of an applicant's emergency preparedness capability (Staff testimony, fol. Tr. 3229, at 7-8). Neither agency has set requirements for maximum acceptable evacuation times; nor do they require the addition or upgrading of roads and highways for evacuation (Appl's. testimony, fol. Tr. 2224, at 3). The Civil Defense Director for St. John the Baptist Parish is of the opinion that NUREG-0654 is deficient in failing to give guidance on evacuation time (Tr. 2996).

15. As a consequence of a potential chemical spill that occurred in St. Charles Parish, an evacuation of an area containing nine families was required. Three families refused to evacuate and were forcibly removed, thereby requiring security forces (Tr. 2717-21). The foregoing situation was unusual; the residents had all evacuated on the first day and no incident occurred. Therefore, three families were reluctant to evacuate a second time. It was the opinion of the Civil Defense Director for St. Charles Parish that few people would refuse to leave the 10-mile EPZ in the event of a nuclear incident and that there would be no diversion of Parish resources (Tr. 3035-39).

16. Both Parish CD Directors predicted that in the event of an emergency calling for widespread evacuation there would be an increase in the number of automobile accidents (Tr. 2840). Applicant's expert witness on traffic and regional planning stated that past experience has demonstrated that the incidence of traffic accidents is reduced because people drive slowly (Tr. 2841, 2843-44). In any event, the evacuation time estimate study takes accidents into account in that stalled cars would be pushed aside and tow trucks could use inbound lanes to gain access to damaged vehicles (Tr. 2839-40). The evacuation time estimate study assumed that there would be enough rescue vehicles to clear the roads of accident-damaged cars (Tr. 3003).

17. While FEMA witnesses did not take hysteria into account in evaluating the evacuation plans, FEMA implicitly took hysteria into account in preparing planning criteria of NUREG-0654 (Tr. 2914, 2918). The Staff confirmed that panic and anxiety were not specifically addressed in NUREG-0654, and added that the public education program and provisions therein for providing direction to the public are designed to reduce public hysteria (Tr. 3797, 3811). Thus, public overreaction to a nuclear accident, such as spontaneous evacuation, would be minimized provided the guidance of NUREG-0654 is followed, (Tr. 3806, 3811 and 3819), and no additional measures would be required to cope with public panic (Tr. 3810). Previous experience has shown that although there will be anxiety and fear in the event of an accident, they did not interfere with the ability to take protective actions (Tr. 3808).

18. Contrary to Joint Intervenors' assertion, the Parish Plans do not call for an arbitrary and inflexible "single mode" evacuation. Maps in the Parish Plans show that residents in some sectors of St. John the Baptist Parish should also evacuate to the northwest and that residents in some sections of St. Charles Parish should also evacuate to the west, northwest and southeast (Appl's. Ex. 3, at 179-182, 342-44). Further, the CD Directors for each Parish stated that their plans were not inflexible — that depending on conditions (*e.g.*, prevailing winds), they could and would determine to evacuate in various directions other than strictly to the east or west (Tr. 2671-73; 2794-96).

19. Based on the foregoing Findings, the Board finds that the roads and highways are adequate for evacuation.

2. *Evacuation Warning System*

Joint Intervenors' Contention 17/26(1)(c) alleges: . . . the evacuation warning system is inadequate.

20. 10 CFR §50.47(b)(5) requires:

> [T]he content of initial and followup messages to . . . the public has been established; and means to provide early notification and clear instruc-

tion to the populace within the plume exposure pathway Emergency Planning Zone have been established.

21. 10 CFR Part 50, App. E, §IV.D.3 states in part:

> [E]ach nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. . . . The design objective of the prompt public notification system shall be to have capability to essentially complete the initial notification of the public . . . within about 15 minutes [after licensee notifies State and local officials of an emergency].

a. The Siren System

22. Criterion E and Appendix 3 of NUREG-0654 provide guidance for the establishment of an emergency notification system. Sirens must be capable of providing coverage of essentially 100% of the population within the 10-mile EPZ (*Id.*, at 3-3), at least 10 db above the average daytime ambient background noise level (*Id.*, at 3-8). For low population areas (less than 2,000 person/mi^2), the estimated average background is 50 db(a) (*Id.*, at 3-11). The siren signal must be a three to five minute steady signal, capable of repetition (*Id.*, at 3-12).

23. The proposed primary alert system for the Waterford 3 plume EPZ consists of 38 fixed-location, rotating, radio-controlled, battery-operated sirens to be located in St. Charles and St. John the Baptist Parishes (Appl's. testimony, fol. Tr. 2218, at 9; Appl's. Ex. 5).

24. The sirens to be used are rated at 125 db(c) at 100 feet and are positioned so as to provide a minimum coverage of 60 db(c) to essentially 100% of the population (Appl's. testimony, fol. Tr. 2218, at 10; Appl's. Ex. 5). The location of the sirens was developed by a consulting firm under contract with Applicant, Acoustics Technology, Inc., which used a computer model to verify the capabilities of the system (Appl's. Ex. 5).

25. The sirens will produce a 3-5 minute steady signal (Appl's. testimony, fol. Tr. 2218, at 9).

26. The fixed siren system is supplemented by tone alert receivers, radios, mobile sirens, and mobile loud speakers (*Id.*). These devices will be used to alert transients or locals who may be located in otherwise uninhabited recreational areas (*Id.*, at 11).

27. Persons with hearing impairments are being identified and provisions for contacting them are being established (Appl's. testimony, fol. Tr. 2262, at 11).

28. Major industries, at which ambient noise levels may exceed 50 db(a) in the plume EPZ, will receive direct notification via radio, tone-alert receiver, or telephone (*Id.*, at 12). These businesses have been identified and are listed in the Parish plans (Appl's. Ex. 3 at 105-110, 268-271). The list for St. John the Baptist

Parish includes the telephone number of each business, while the list for St. Charles Parish omits the telephone numbers.

29. The Parish Civil Defense Director for St. John the Baptist Parish testified that an agreement exists with South Central Bell Telephone. The agreement establishes a priority list of telephones in order that, if the telephone system were to become overloaded during an emergency, ready communication through the priority lines would be preserved (Tr. 2820-21).

30. River traffic on the Mississippi will be notified through the Port of New Orleans Coast Guard Facility and air traffic will be closed down over the Waterford area after notification of the FAA regional office in Houston (Appl's. testimony, fol. Tr. 2258 at 7).

31. FEMA has made no final findings as to the adequacy of the proposed public alert/notification systems. FEMA had made interim findings which were included in Supplement 3 to the SER, but these findings only addressed the system design criterion stated in the Parish Plans (Staff Ex. 5, at F-35). However, FEMA officials who were called as witnesses have reviewed the warning plan. They testified that the siren system is in compliance with the appropriate criteria, but that FEMA has reserved final approval until procedures for notifying industry and the hearing-impaired are finalized and the entire system is tested (FEMA testimony, fol. Tr. 2864, at 6-7).

32. FEMA will field test and evaluate the entire system as per NUREG-0654, App. 3. The NRC Staff will verify compliance with 10 CFR Part 50, App. E, prior to full-power authorization (Staff testimony, fol. Tr. 3229, at 10-11; 10 CFR §50.47(d)).

b. The Emergency Messages

33. Guidance is provided by NUREG-0654. Criteria E.5-E.7 of NUREG-0654 provide for the establishment of an Emergency Broadcast System (EBS) and pre-prepared messages specifying emergency instructions (sheltering, respiratory protection, or evacuation).

34. Chapter 4 of the State of Louisiana Peacetime Radiological Response Plan (Rev. 4, Feb., 1982) (State Plan) establishes general areawide EBS messages (Appl's. Ex. 2, at 4-3), including a sheltering message and an evacuation message for the Waterford area (*Id.*, at 4-7, 4-8). The Plan also provides for the development of specific EBS messages for risk areas. All messages are kept on file by the Louisiana Office of Emergency Preparedness (LOEP) for transmission over Louisiana's EBS.

35. Attachment 1 to the State Plan consists of the Parish Plans for St. Charles and St. John the Baptist Parishes. The Parish Plans further develop the emergency notification program. The Parishes have drafted emergency messages for sheltering and evacuation. The messages include the location of reception centers and

specific evacuation routes (Appl's. Ex. 3, at 135-149, 302-314). Also included is a school evacuation message; if school is in progress, parents are told where to meet their children (*Id.*; *See also* Appl's. testimony, fol. Tr. 2218, at 6).

36. EBS messages fail to provide information on pick-up points for persons without transportation. *See* Fdg. 63, *infra*.

37. Emergency information will also be broadcast over local radio and cable TV stations (Appl's. testimony, fol. Tr. 2243, at 6-8; Appl's. testimony, fol. Tr. 2246, at 4).

38. FEMA has not made a final determination as to the adequacy of the emergency public notification program. FEMA has, however, made interim findings that the procedures in the State Plan for notifying the public in the plume exposure pathway were incomplete, because EBS messages were yet to be developed (Staff Ex. 5, at F-9). The State Plan has since been revised and now includes EBS messages. *See* Fdgs. 34-35, *supra*. FEMA interim findings on the Parish Plans emergency information program contained no adverse comments (*id.*, at F-35).

39. FEMA witnesses testified that the emergency public notification program was adequate (FEMA testimony, fol. Tr. 2864, at 5).

40. Based on the foregoing, the Board finds that, subject to the inclusion of pick-up point information in the evacuation messages, the evacuation warning system is adequate.

3. *Command Decision Structure*

Joint Intervenors' Contention 17/26(1)(d) alleges: . . . there is not an adequate command decision structure, including appropriate guidance, for commencing evacuation.

41. The Commission regulations (10 CFR §50.47) and NUREG-0654 identify the on-site and off-site organizations and responsibilities in the event of an accident. At Waterford 3, the Emergency Coordinator is charged with the command and control of all accident-mitigating actions at the site. His first action is to classify the emergency severity[26] and notify the State of Louisiana and the two Parishes adjacent to Waterford 3 of his assessment and his recommendation for protective actions. He also supplies sufficient information as to the nature of the accident, estimated releases of radioactivity, and projected dose rates at various distances and directions so that the State and Parish officials can make an independent assessment of the protective action that will best protect the public. The State recommendation for protective action is forwarded to the Parish where the final judgment is made and put into action (Appl's. testimony, fol. Tr. 2218, at 12-15).

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[26] The emergency classifications are: Unusual Event, Alert, Site Emergency, General Emergency. The criteria for the emergency classifications are given in Appendix 1 of NUREG-0654.

42. Section 5 of the "Waterford Steam Electric Station Emergency Plan" describes the Applicant's emergency organization (Appl's. Ex. 1). It is the duty of the Operation Shift Supervisor to recognize when an event has occurred that has the potential to affect the safety of the plant. At that time, he assumes the duties of Emergency Coordinator, alerts the Plant Manager, declares an "Unusual Event," and notifies the State and Parish agencies. If the accident worsens to the point where an "alert" is announced, the Plant Manager-Nuclear or the Assistant Plant Manager assumes the position of Emergency Coordinator, and all of the on-site emergency organization and facilities are mobilized (*See* Table 5-1 of Appl's. Ex. 1). Declaration of a "Site Emergency" or a "General Emergency" brings Applicant's entire emergency organization and facilities into operation, off-site as well as on-site (*Id.*). However, the Emergency Coordinator remains in command at all times. The command does not pass to the off-site organization, although the duties of coordinating with State and local officials are passed to the off-site Emergency Operations Facility (EOF) Director (Staff testimony, fol. Tr. 3229, at 13).

43. The Waterford 3 emergency plan provides that the Emergency Coordinator will notify the off-site agencies within 15 minutes of the declaration of an emergency. The primary means of notification is by dedicated telephone links to the risk Parishes, the Louisiana Nuclear Energy Division (LNED), and LOEP. Back-up communication will be by radio; radio links to the Parishes and LOEP now exist. The link to LNED is dependent on FCC approval of an application for a license (Tr. 2800, 2802, 3008, and 3010-13). The present lack of the link does not reflect unfavorably on the command structure.

44. When LNED and LOEP are notified of an emergency at Waterford 3, LNED will activate its operational headquarters in Baton Rouge and dispatch a Fixed Facility Response Team (FFRT) to conduct monitoring and sampling activity within the plume EPZ. LOEP will activate the State Emergency Operations Center (EOC). LNED will make protective action recommendations (independent of the utility recommendation). Its assessment is based on the information on release rates provided by the facility, on data on radiological conditions supplied by utility and LNED monitoring teams, and on additional factors such as the circumstances and nature of the accident. The LNED accident assessment and recommendation will be forwarded to the Assistant Secretary, Office of Environmental Affairs (ASOEA) for evaluation. Upon the decision of ASOEA, LNED will provide protective action recommendations to the Parishes (Appl's. testimony, fol. Tr. 2218, at 15-16; Appl's. Ex. 2, at 6-4). LNED is capable of making radiological dose projections in the area surrounding Waterford 3 on a 24-hour-per-day, seven-day-per-week basis (Appl's. Ex. 3, at 42).

45. The ASOEA will finalize the State protective action recommendations. In the event that the nature of the accident does not give LNED time to make an assessment or issue protective accident recommendations, the recommendations

of the facility (Waterford 3) will be forwarded directly to ASOEA for a decision (Appl's. Ex. 2, at 6-6).

46. When the risk Parishes receive notification from the utility, they will implement notification and mobilization procedures for Parish personnel and resources. Each Parish will activate its Emergency Operations Center and will maintain continuous communications with the utility and with the State agencies in order to receive updated information and the utility's and State agencies' recommendation for response (Appl's. testimony, fol. Tr. 2218, at 15).

47. Each Parish EOC has a staff of responsible Parish officials and a representative from the utility who will assist by translating technical information received from the plant. This staff will assist the Parish chief executive in making the final decision to take protective actions. Each Parish will have information, data, assessments, and protective action recommendations from the Waterford 3 plant and from the State (*Id.* at 16). The Parish will implement protective action based on local conditions and the State or facility recommendations (Appl's. Ex. 3, at 151 and 317).

48. The NRC Staff has reviewed the Applicant's Emergency Support Organization and has noted certain deficiencies that had not been resolved at the time of the hearing. Back-up communications were addressed above (*See* Fdg. 43, *supra*). In addition, the Staff requires additional information (1) on the off-site emergency notification system; (2) via a diagram showing interfaces between certain response organizations; (3) on training for Corporate Command Center Personnel; (4) on duties of the Emergency Planning Coordinator; and (5) on training of individuals responsible for the planning effort (Staff testimony, fol. Tr. 3229, at 14).

49. The Applicant has committed to correct these deficiencies. The Staff does not consider the deficiencies to be important aspects of the command decision structure, since they refer to the planning aspect of the emergency preparedness program and since the personnel involved are not part of the command decision structure in an actual emergency (Tr. 3901; Appl's. Ex. 8).

50. Subject to satisfactory resolution of the above items, the NRC Staff has concluded that the Applicant's organization and provision for command decision, including guidance for commencing evacuation, meet the requirements of 10 CFR Part 50, App. E, §IV.A, and the criteria set forth in NUREG-0654 (Staff testimony, fol. Tr. 5229, at 14).

51. FEMA officials have reviewed the State and Parish plans for responding to an emergency at Waterford 3. They note that the Parish plans do not name by title the LP&L official at the EOF who will have the authority or responsibility to provide protective action recommendations to off-site authorities. Otherwise, they find that the command structure is adequate (FEMA testimony, fol. Tr. 2864, at 8; Tr. 2868).

52. Based on the foregoing, the Board finds that, subject to the condition that the Parish Plans designate by title the LP&L official at the EOF who will have the

authority or responsibility to provide protective action recommendations to off-site authorities, the command decision structure is adequate.

4. *Evacuation Drills*

Joint Intervenors' Contention 17/26(1)(e) alleges: . . . the Emergency Plan fails to provide for realistic and comprehensive evacuation drills, in that the provisions for moving individuals are not actually tested.

53. 10 CFR §50.47(b)(14) requires that:

> Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

54. 10 C.F.R Part 50, App. E, §F requires the Emergency Plan to provide for training, exercises, and drills. Section F.1 requires a periodic "full-scale exercise which tests as much of the licensee, State, and local emergency plans as is reasonably achievable without mandatory public participation . . ."

55. Section N of NUREG-0654 provides guidance for exercises and drills. It does not require evacuation of the public.

56. Chapter 13 of the State Plan establishes a regular exercise program, to include "selected mobilization of State and Parish personnel and resources to verify the capability to respond to an accident requiring off-site response." The State Plan does not require evacuation of the public (Appl's. Ex. 2, at 13-1 to 13-2; Appl's Ex. 3, at 32).

57. Exercises will simulate activation of the notification system and test the decisionmaking process (Appl's. testimony, fol. Tr. 2218, at 18). The communications systems, accident assessment, data gathering, logistical support, and protective response functions will also be tested (Appl's. testimony, fol. Tr. 2258, at 8). During the full-scale exercise, school buses will be moved to simulate evacuation (Appl's. testimony, fol. Tr. 2243, at 12-13).

58. Based on the foregoing, the Board finds that the planned exercises are adequate and need not include actual evacuations.

5. *Evacuation for Special Persons*

Joint Intervenors' Contention 17/26(1)(f) alleges: . . . procedures are inadequate for evacuating people who are:

(i) without vehicles;
(ii) school children;
(iii) aged or crippled;
(iv) sick and hospitalized;

(v) imprisoned; and

(vi) transient workers

59. 10 CFR §50.47(b)(10) on Emergency Planning requires that "[a] range of protective actions have been developed for the plume exposure pathway EPZ for . . . the public."

60. Criterion J.9 of NUREG-0654 provides guidance. It states that "[e]ach State and local organization shall have a capability for implementing protective measures. . . " Criterion J.10.d requires the protection of persons "whose mobility may be impaired." Criterion J.10.g states that the organization's plans to implement measures for the plume exposure pathway shall include "means of relocation."

61. The Parish Plans designate a transportation officer whose responsibility it is to develop evacuation plans, effect agreements to obtain vehicles, maintain lists of persons needing transportation, and coordinate movement of vehicles in the event of an emergency (Appl's. Ex. 3, at 101, 264). Particularized planning is required for students, institutionalized persons (hospital patients, residents of nursing homes, and prisoners), housebound invalids, and persons without means of transportation (*Id.* at 102, 265).

62. The Parish Plans establish pick-up points for persons without transportation (*Id.* at 185, 347).

63. Applicant testified that the evacuation messages broadcast in the event of an emergency would direct persons without transportation to the pick-up points (Appl's. testimony, fol. Tr. 2218, at 19). The Parish Plans, however, do not include pick-up point locations and directions in their EBS messages (Appl's. Ex. 3, at 139-50, 306-14).

64. The Parish Plans have identified the schools in the plume exposure pathway EPZ (*Id.* at 99-100, 262-63) and have established evacuation routes and relocation centers for the school children (*Id.* at 146-48, 313-14). Primary responsibility for protective action has been delegated to the school superintendents (*Id.* at 95-98, 259-61).

65. St. Charles Parish and St. John the Baptist Parish do not have sufficient number of buses to evacuate the school population and persons without transportation. One hundred twenty-nine buses are needed for persons without transportation, and 290 buses are needed for school children (Appl's. testimony, fol. Tr. 2262, at 2-4). There is an adequate supply of vehicles in neighboring parishes; agreements with those parishes to obtain additional buses are being finalized, and the LOEP has assumed responsibility for arranging for support parish transportation resources (*Id.* at 4-5; Appl's. Ex. 3, at 217, 375).

66. In each Parish, the Council on Aging will maintain a roster of nonambulatory residents (Appl's. Ex. 3, at 200, 355). These rosters will also be maintained by the Parish EOCs (Appl's. testimony, fol. Tr. 2218, at 22). The

rosters will be updated semi-annually (*Id.*). Newspaper advertisements and self-addressed stamped postcards enclosed with the public information brochure will be used to encourage the aged and handicapped to notify the Parishes of their needs (*Id.;* Tr. 2982-84).

67. In each Parish, primary responsibility for evacuation of non-ambulatory residents, patients in hospitals, and residents of nursing homes has been delegated to a Health and Medical Officer, who will report to the Parish EOC (Appl's. Ex. 3, at 193, 354).

68. The public information program encourages neighbors to assist the housebound to evacuate (Appl's. testimony, fol. Tr. 2218, at 21).

69. The Parish Plans identify two hospitals and two nursing homes in the plume exposure pathway EPZ: St. Charles Hospital, River Parishes Medical Center, Luling Nursing Home, and Twin Oaks Nursing Home (Appl's. Ex. 3, at 195, 354-356).

70. Medical facilities to which hospital patients and residents of nursing homes would be evacuated have been identified (*Id.* at 195, 356).

71. The Parishes do not have sufficient number of vans and ambulances to evacuate the housebound, hospital patients, and residents of nursing homes (Tr. 2506-07). To evacuate the hospitals and nursing homes, 37 ambulances, 10 buses, and 3 vans are required (Appl's. testimony, fol. Tr. 2262, at 11). To evacuate the housebound, another 25 vans and 25 ambulances are required (Tr. 2504, 2524). The Parish Plans identify sufficient vehicles in support parishes (Appl's. Ex. 3, at 207, 365), and agreements are being negotiated for their provision (Tr. 2507; Appl's. Ex. 3, at 217, 375).

72. The Parish Plans identify two jails: St. Charles Parish Courthouse Jail and St. John the Baptist Parish Jail (Appl's. Ex. 3, at 183, 345). The Parish Plans delegate the primary responsibility for evacuation of prisoners to the Parish Sheriff. He will consider the use of radioprotective drugs if evacuation cannot be immediately accomplished (*Id.*).

73. Agreements have been reached with neighboring Parishes for confinement of prisoners during an evacuation (*Id.* at 184, 346).

74. The average prison population in the two risk parishes is 55 persons (FEMA testimony, fol. Tr. 2864, at 16). Prisoners will be evacuated by police car or bus (Appl's. Ex. 1, App. B at 20).

75. No evidence was submitted that sufficient vehicles were available to evacuate the prisoners in a timely fashion, or that detailed plans have been formulated which commit personnel for the evacuation of prisoners.

76. Transient workers will either evacuate by private automobile (Appl's. testimony, fol. Tr. 2218, at 22-23) or be directed to the pre-designated pick-up points, as are residents without transportation (*Id.*).

77. The Parish Plans provide for direct transmission of emergency messages to industrial centers (*See* Fdg. 28, *supra*).

78. FEMA, in Interim Findings, found that the implementing measures for evacuation were incomplete (Staff Ex. 5, at F-37, F-38 (comments on elements J.9 and J.10.g)).

79. FEMA officials testified that the absence of letters of agreement with support parishes prevented a conclusion that the evacuation plans were adequate (FEMA testimony, fol. Tr. 2864, at 9-16).

80. NUREG-0654, J.10.c requires that State and local plans provide for the use of radioprotective drugs for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult. No evidence was adduced that evacuation of prisoners was either infeasible or very difficult.

81. Based on the foregoing, the Board finds that, subject to the following conditions, the plans are adequate for evacuating special classes of persons. The conditions are: (1) that letters of agreements with support parishes for the necessary vehicles and drivers be completed and submitted to the NRC staff; (2) that the parish plans be amended to specify vehicles allotted to evacuate the prisons (such vehicles shall have a combined capacity to evacuate the prison population) and to specify the personnel commitment for drivers and guards (the drivers, guards, and vehicles shall have no other emergency function until after prisoner evacuation is completed); and (3) that pick-up point information be included in the evacuation messages.

6. *Potassium Iodide*

Joint Intervenors' Contention 17/26 (2) alleges that:

> Applicant has failed to adequately make provision according to the Emergency Plan contained in Chapter 13.3 of the FSAR, for distribution and/or storage of potassium iodide in accordance with accepted public health practice in locations which are readily accessible to affected individuals for protection against thyroid irradiation.

82. The most significant gaseous radioactive isotope released during a reactor accident in terms of health effects is Iodine-131 (I-131). Radioactive isotopes of iodine that are inhaled and ingested accumulate in the thyroid where they can lead to local radiation damage (Appl's. testimony, fol. Tr. 3135, at 2; Appl's. Ex. 7). The precise level of radioiodine incorporation into the thyroid that is tumorogenic is unknown. Radiation-induced thyroid neoplasms are usually benign or well differentiated carcinoma with good prognoses. Evidence from subjects exposed to relatively large amounts of diagnostic I-131 and carefully followed suggests no increase in thyroid tumor incidence in populations exposed to about 100 rads for adults or about 160 rads for persons under 20 years of age (Staff Ex. 6, Encl. B, at 1).

83. A variety of chemical substances can block the accumulation of radioiodine in the thyroid. For a number of reasons, such as efficacy, safety, and availability, the FDA provisionally recommends potassium iodide as most suitable for this purpose (Staff Ex. 6, Encl. C, at 2). The effectiveness of large doses of stable iodide in reducing the amount of radioactive iodine taken up by the thyroid gland appears to be dependent on two factors: (1) the proportion of radioactive iodide relative to the increased amount of stable iodide in the circulating blood is greatly reduced (dilution effect) and (2) as the levels of iodide in blood increases, there is an autoregulatory mechanism that limits the rate at which further iodide is accumulated by the gland. The suppression of uptake of radioiodine persists for as long as the intake of stable iodide is maintained at adequate levels. When doses approximating 130 mg of stable KI have been given prior to exposure to radioactive I-131, a 90 percent or greater reduction in peak thyroid accumulation of I-131 has been observed (*Id.*).

84. EPA Protective Action Guides call for protective action when projected total accumulated thyroid doses are estimated at 5-25 rem for the general public (Staff Ex. 6, Encl. C, at 9). FDA proposed guidelines suggest potassium iodide for thyroid blocking is considered to be a proper response in a nuclear emergency when the projected radiation dose to the thyroid is 10 rem or greater (Staff Ex. 6, Encl. C, at 10). The 10-rem level is arbitrary. It is based upon an assumption that on a population basis, the risk of potential adverse effects from a 10-rem radiation dose to the thyroid exceeds the risk of any adverse effects that might be encountered as a result of administering potassium iodide in daily dose of 65 mg to individuals under one year of age or 130 mg to the remainder of the population for several days. As radiation doses decrease below 10 rem, the relative risks of the potential adverse effects of radiation and of the drug become less clear (*Id.*).

85. Notwithstanding the above recommendation, the FDA considers that it is the prerogative and responsibility of State and local public health agencies to determine the "action level" at which the general public should be administered the drug or if it should be administered at all (*Id.*, at 14).

86. NUREG-0654 does not require the use of KI for the general public. NUREG-0654 specifies that emergency plans are to include provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons in the plume EPZ, and that State and local plans are to indicate the method by which decisions on the distribution of such drugs to the general public will be made in an emergency (NUREG-0654, Criteria J.10.e and J.10.f). FEMA's policy with regard to the use of KI for the general public is that the decision to distribute it to the general public is a matter of State public health policy (FEMA testimony, fol. Tr. 2864, at 18).

87. The State Plan does not provide for the administration of KI to the general public. The State will not rely on KI as a protective action option for the general public, but will instead rely on other protective action options, such as sheltering or

evacuation for protection of the general public in a serious radiological emergency (Appl's. Ex. 2, at 7-2; Appl's. Ex. 3, at 47; Appl's. Ex. 3, Encl. 1, at 154 and Encl. 2, at 320; Appl's. testimony, fol. Tr. 3135, at 3).

88. The State's KI policy was developed by the Assistant Secretary of the Office of Environmental Affairs, Louisiana Department of Natural Resources, with the assistance and concurrence of the State Health Officer. In developing its policy, the State took into consideration certain reported risks and problems associated with the pre-distribution and usage of KI as a protective action option for the general public (Appl's. testimony, fol. Tr. 3528, at 11; Tr. 3174, 3181-87). Those reported risks and problems are the subject of ongoing consideration by various federal agencies, including NRC. (*See, e.g.*, Staff Ex. 6; Staff Ex. 7; Appl's. Ex. 9). The State's KI policy could change upon receipt of further federal guidance (Tr. 3190, 3201).

89. Administration of KI prior to exposure to radioiodines is required to obtain maximum protection, although some protection is afforded by post-exposure administration of the drug (Tr. 3196-98; Staff Ex. 7, at 1-2; *See* Staff Ex. 6, Encl. C, at 13). As indicated above, there are risks and problems associated with the predistribution and use of KI as a protective action option for the general public. Predistribution of KI to the general public would preclude responsible control of the time and manner of administration of the drug (Staff Ex. 7, at 5; Appl's. testimony, fol. Tr. 3135, at 5). If the drug were predistributed and thus readily available at all times, individuals might, on the basis of rumor or a misunderstanding of plant status, take the drug without being instructed to do so, thereby exposing themselves unnecessarily to the risk of allergic and adverse reactions and side effects from the drug. Similarly, predistribution would increase the chance that individuals would exceed the recommended dose (*i.e.*, take several doses rather than just one). (Appl's. testimony, fol. Tr. 3135, at 5).

90. Predistribution of KI would also involve a danger that children and others would accidentally ingest the drug in the absence of any need for it, and quite possibly in doses exceeding the recommended dosage, thereby exposing themselves unnecessarily to risks (and, in the case of excessive doses, increased risks) of side effects and allergic and adverse reactions (*Id.* at 5).

91. Predistribution of KI would preclude responsible control of the storage of the drug. KI must be stored at a controlled temperature between 59° and 86°F and is sensitive to both moisture and light (Appl's. Ex. 6, at 2). Predistribution would therefore involve the risk that the drug would be improperly stored, permitting decomposition and loss of potency (Appl's. testimony, fol. Tr. 3135, at 5).

92. The availability of other protective action options, including evacuation, sheltering, and respiratory protection, diminish the necessity of administration of KI (and especially its predistribution) to the general public. In the event of a serious radiological accident involving significant releases of radioiodines, KI could be effective in thyroid protection. However, an accident resulting in significant

releases of radioiodines would also involve significant releases of noble gases and radiocesiums, which would cause whole-body and lung exposures that are not mitigated by KI. A KI plan for the general public might instill a false sense of security, inhibiting effective evacuation or sheltering (Staff Ex. 6, at 2; Staff Ex. 7, at 4; Appl's. testimony, fol. Tr. 3135, at 6).

93. Present uncertainties as to the amount of radioiodine which might be released in an accident further support the State's policy. Recent research comparing consequence estimates used in risk assessment with actual results of accidents and large-scale experiments has indicated that the radioactivity (including I-131) actually released to the environment in an accident has been substantially overestimated (Appl's. testimony, fol. Tr. 3135, at 6-7; Staff Ex. 6, at 2; Staff Ex. 7, at 4).

94. There is also an ongoing debate among experts as to the toxicity of radioiodine to the thyroid (Appl's. testimony, fol. Tr. 3135, at 7). In light of the uncertainty on this subject, the American Thyroid Association has recommended that additional studies of the biological effects of radioiodine on the thyroid be sponsored to define the risk to the thyroid attendant to exposure to radioiodine (Staff Ex. 6, Encl. B, at 1, 4).

95. The multiple uncertainties associated with the KI issue are reflected in current Commission policy, pursuant to which the NRC Staff is to:

1. Continue to work with appropriate Federal agencies, *i.e.*, FEMA, FDA and EPA, to address the uncertainties in the use of KI by the general public and possible alternative respiratory protection strategies.
2. Press on with source term technology studies . . . to a point where the Commission can adequately consider the potential impact on . . . alternative protective actions for public use in a nuclear plant emergency.

The Commission has expressly reserved judgment on the advisability of recommending the stockpiling of KI for the general public (Appl's. Ex. 9, at 1).

96. It is the opinion of the NRC Staff, and of several medical advisors consulted separately, that:

1. The utility of distributing KI to the general public for thyroid blocking in case of a reactor accident is very questionable.
2. There are potential side effects from KI which some medical authorities believe warrant further investigation, and may warrant limiting its use.
3. Additional guidance from the federal government is appropriate in order to aid States in developing their policy on the use of KI for the general public.

(Staff Ex. 6, at 4; Staff Ex. 7, at 6).

97. While it is conceivable that comprehensive federal guidance, applicable to all operating reactors, may at some point in the future recommend the administration of KI to the general public in an emergency, there is clearly no current "accepted public health practice" providing for KI use by the general public.

Tennessee is the only State in which KI has been distributed to the general public residing in the vicinity of a nuclear plant. Weighing factors such as the risks of adverse and allergic reactions and side effects, the logistical problems of KI administration, and the availability of other protective action options, the State of Louisiana's health policy decision not to provide KI to the general public is well founded (Appl's. testimony, fol. Tr. 3135, at 8; Tr. 3212).

98. Based on the foregoing, the Board finds that the emergency plans need not provide for the storage and/or distribution of KI to the public.

B. Synergism

Joint Intervenors' Contention 8/9 alleges:

> Applicant failed to properly evaluate the cumulative and/or synergistic effects of low-level radiation with environmental pollutants, known or suspected to be carcinogens.

The Radiation Hazard

99. The low-level radiation of concern to Joint Intervenors is that which will result from the releases of gaseous and liquid radioactive effluents from Waterford 3 during normal operations. Applicant's ER and the Staff's FES demonstrate that Waterford 3's emissions during normal operation will comply with Appendix I permissible releases (Appl's. testimony, fol. Tr. 461, at 4-5; Staff Ex. 1, §5.9 and App. J). Staff's analysis was based on site-specific values for releases, and on the topography, geography, and meteorology at Waterford (Staff Ex. 1, §5.9). The calculations yielded approximately 6 mrem per year as the dose for the maximally exposed individual (*Id.* at J-7; Tr. 1000, 1010), and 0.01 mrem per year as an average dose to members of the population within a 10-mile radius of the plant (Appl's. testimony, fol. Tr. 461, at 4-5).

100. Staff's analysis of the releases followed the methodology established in NUREG-0017, "Calculations of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Pressurized Water Reactors" (PWR-GALE code) (Staff Ex. 1, at 5-35). Applicant used the same methodoloqy (Gale code) (Tr. 491), and the Staff's and Applicant's projections agreed within narrow levels (Tr. 498).

101. Applicant reports from its ongoing monitoring program of existing natural background radiation in the area of the plant site that existing natural levels average about 80 mrem per year with considerable variations, for example, a variation of about 20 mrem per year between two points only about a mile or two apart (Appl's. testimony, fol. Tr. 461, at 8).

102. The effects of the radiological releases from Waterford 3 were evaluated explicitly by Applicant and by the Staff. Their evaluations, summarized by

Applicant in its testimony and provided in detail by the NRC Staff in their FES and in testimony, were that the impact would be very small (*See* Appl's. testimony, fol. Tr. 461, at 10; Staff Ex. 1, at 5-36; Staff testimony, fol. Tr. 735, at 3-6). Their evaluations are based on commonly accepted methodology and risk functions for low levels of radiation. (Staff testimony, fol. Tr. 766, at 5 (dose calculational models); Tr. 492 (dose calculational models); Staff Ex. 1, at J-2, 3 (indicating use of dose commitment models described in Reg. Guide 1.109); Appl's. testimony, fol. Tr. 461, at 11 (risk functions); Staff testimony, fol. Tr. 735, at 3-9 (risk functions)).

The Environmental Pollution Hazard

103. In the corridor along the Mississippi River between Baton Rouge and New Orleans there is a large burden of chemical exposures through air, drinking water, and occupation — larger than in many other areas of the country (Jt. Inters.' testimony, fol. Tr. 1055, at 5).

104. Studies were presented that purported to link high levels of environmental pollution to increased risk of cancer in southeastern Louisiana through death certificate analysis. One study revealed approximately a two-fold excess risk of lung cancer associated with certain types of industries, such as the ship-building industry. (Gottlieb, Pickle, *et al.*, JNCI, November, 1979). Lung cancer risk was found among older men who had been employed in the petroleum industry and among male and female residents of towns where the petroleum industry was a major employer (Jt. Inters.' testimony, fol. Tr. 1055, at 6-7). A second study, also a death certificate analysis, on pancreatic cancer mortality in Louisiana (Pickle, Gottlieb, AJPH, March, 1980), revealed high pancreatic cancer mortality among white males in a cluster of Louisiana parishes. Excess risk was seen for workers in the oil-refining and paper-manufacturing industries and for residents living near refineries. The third Louisiana study, "Cancer and Drinking Water in Louisiana: Colon and Rectum" published in 1981 (Gottlieb, Carr, Morris, IJ of E, 1981), found a significant risk for rectal cancer associated with drinking water derived from the Mississippi River. A multi-dimensional contingency analysis found the association between rectal cancer and surface water (Mississippi River water used for drinking water) not dependent on age, race, sex, and diet. Chlorination of the water was associated significantly with rectal cancer. Among those who used river water, the risk increased inversely with the distance from the river mouth, with greater risk downstream from the many industries which line the river (*Id.*, at 7).

105. Notwithstanding the positive findings, the authors of the two death certificate studies were tentative about drawing causal inferences with respect to environmental pollutants and cancer induction. They were concerned about limitations in their studies, *e.g.*, the inability to control for smoking and alcohol consumption (Tr. 2066-68, 2070-71).

The Multiplicative Hazard

106. The Joint Intervenors' witnesses defined synergism as "the capacity of two (or more) substances when combined to cause an effect not predicted by the behavior of either substance when acting alone" and "the action of two or more substances, chemicals, or agents to achieve an effect of which each is individually incapable" (Jt. Inters.' testimony, fol. Tr. 1055, at 3, and fol. Tr. 1836, at 5). One of Applicant's witnesses defined synergism as a biological response of one agent and an effect of the biological response of another agent which when combined are greater than the additive effects of both on the same system occurring at the same time (Tr. 3593). The Board found the sense of all these definitions to be compatible with one another. The Board's conclusions drawn from evidence are based on the common sense of these definitions.

107. Studies were reported demonstrating synergistic or multiplicative effects on cancer induction between certain hormones and chemical carcinogens and radiation. The radiation dose levels and dose rates employed in these studies, namely in the one hundred and fifty to several hundreds of rads range, are many orders of magnitude (10,000 to 100,000 times) greater than the levels of radioactivity which are postulated to be released from Waterford 3 during normal operation. No synergistic effects between radiation at the very low dose levels to be released from Waterford 3 and chemical carcinogens have ever been demonstrated (Appl's. testimony, fol. Tr. 461, at 13-14; Staff testimony, fol. Tr. 735, at 10-15; Tr. 942-45, 987-89 and 3556-57).

108. Although it was explicitly sought by the Board from the various experts who testified, there was no existing scientific evidence presented that provided an adequate basis for extrapolating from synergistic effects shown at high doses down to small doses such as those expected from Waterford 3. It was testified that attempts have been made to extrapolate down linearly from experiments showing synergism at high doses to low doses such as involved here, but the efforts have not been particularly useful (Tr. 716-17; 942; 3656-57).

109. The levels of radioactivity to be released by Waterford 3 during routine operation will result in doses that are a small fraction of the doses individuals receive from background radiation. The doses from Waterford 3 will be even less than the 20 mrem variation in the background radiation in the immediate vicinity of the Waterford plant site. Even if the synergism were to occur, the impact would be miniscule and may in fact be zero, and would be, in any event, encompassed in the impact occasioned by chemical carcinogens acting with existing natural background radiation to which the public is continually exposed (Appl's. testimony, fol. Tr. 461, at 10, 14-15; Staff testimony, fol. Tr. 735, at 3, 14-15).

110. Neither Applicant nor the NRC Staff explicitly took synergism into account in its assessment of the effects which will result from Waterford 3's radioactive releases (Tr. 530; Staff Ex. 1, at 9-14).

111. Based on the foregoing, the Board finds that Applicant and Staff did not err in not assessing synergistic effects. Nevertheless, the environmental statement may be deemed amended *pro tanto* to include these Findings.

CONCLUSIONS OF LAW

The Board has considered the entire record in this proceeding and concludes as follows:

1. With respect and limited to Joint Intervenors' Contention 17/26(1) and (2), the Board concludes pursuant to 10 CFR §§2.760a and 50.57 that, subject to future resolution of 17/26(1)(a) and to the conditions imposed in the Order, *infra:*
   - (a) the emergency plans comply with 10 CFR §50.47 and 10 CFR Part 50, Appendix E, and provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency; and
   - (b) the issuance of this license will not be inimical to the common defense and security or to the health and safety of the public.
2. With respect and limited to Joint Intervenors' Contention 8/9, the Board concludes pursuant to 10 CFR §§2.760a and 51.52(b)(2) that the requirements of Section 102 of the National Environmental Policy Act of 1969, 42 U.S.C. §4332 (1980), have been complied with in this proceeding.
3. With respect to the uncontested, unresolved generic safety issues, the Board concludes that these generic safety issues have been taken into account in a manner that is at least plausible and that, if proven to be of substance, would be adequate to justify operation. (We iterate, however, our grave reservations with respect to unresolved generic safety issue A-45, Shutdown Decay Heat Removal. *See* pp. 1557-60, *supra*.)

ORDER

In the event that Joint Intervenors' contention 17/26(1)(a) is resolved in favor of plant operation, the following conditions shall be met prior to issuance of an operating license:

(1) The Parish Plans shall designate by title the LP&L official at the EOF who will have the authority or responsibility to provide protective action recommendations to off-site authorities.

(2) Letters of agreement with the support parishes for vehicles and drivers necessary to implement the evacuation plans shall be completed and submitted to the NRC Staff.

(3) The Parish Plans shall be amended to specify the vehicles allotted to evacuate prisoners. These vehicles shall have a combined capacity to

evacuate the prison population. The plans shall also specify the personnel commitment for drivers and guards. Furthermore, the plans shall clearly indicate that the personnel designated as drivers or guards will have no other emergency duties and the allotted vehicles shall have no other emergency function until after prisoner evacuation is accomplished.

(4) Pick-up point information shall be included in the EBS evacuation messages.

In accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785, and 2.786, this Partial Initial Decision shall become effective and shall constitute, with respect to matters resolved herein, the final decision of the Commission thirty (30) days after issuance hereof, subject to any review pursuant to the above-cited Rules of Practice. Exceptions to this decision may be filed within ten (10) days after service of this Partial Initial Decision. A brief in support of such exceptions may be filed within thirty (30) days thereafter, forty (40) days in the case of the Staff. Within thirty (30) days after service of the brief of appellant, forty (40) days in the case of the Staff, any other party may file a brief in support of, or in opposition to such exceptions.

Judge Jordan concurs, but was unavailable to sign the instant issuance.

IT IS SO ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

Harry Foreman
ADMINISTRATIVE JUDGE

Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 3rd day of November, 1982.

Cite as 16 NRC 1594 (1982) **LBP-82-101**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James A. Laurenson, Chairman
Dr. George C. Anderson
Dr. M. Stanley Livingston

In the Matter of **Docket No. 50-255-OLA**

CONSUMERS POWER COMPANY
(Palisades Nuclear Power Facility) **November 8, 1982**

The Licensing Board dismisses the operating license amendment proceeding where the sole intervenor defaults in failing to attend a prehearing conference and failing to respond to a show cause order.

RULES OF PRACTICE: DISMISSAL FOR DEFAULT

In an operating license amendment matter, where an intervenor has been admitted as a party and subsequently fails to attend a scheduled prehearing conference or give notice or explanation for such failure and, thereafter, fails to respond to an order to show cause, it will be found to be in default, dismissed as a party, and its previously admitted contentions will be dismissed.

ORDER OF DISMISSAL

Procedural History

On July 23, 1979 the Licensing Board issued a Special Prehearing Conference Order in this matter which admitted Great Lakes Energy Alliance (hereinafter

"GLEA") as a party to this proceeding. GLEA designated Mary P. Sinclair of Midland, Michigan as its representative.

On June 23, 1982 this Board issued an order requiring each party to the proceeding to file a statement on or before July 12, 1982 concerning the status of this proceeding. Licensee and NRC Staff filed such statements; GLEA did not respond to the order.

On August 9, 1982 the Board issued an order scheduling a prehearing conference to be held on September 21, 1982 in St. Joseph, Michigan. This order was published in the *Federal Register* on August 13, 1982. 47 *Fed. Reg.* 35382 (August 13, 1982). Both the order of June 23, 1982 and the order of August 9, 1982 were served upon GLEA representative Mary P. Sinclair.

On September 21, 1982, a prehearing conference was convened in this matter at St. Joseph, Michigan. Licensee and NRC Staff attended and were represented. GLEA did not attend the prehearing conference and was not represented. Mary P. Sinclair did not attend the prehearing conference and was not represented. This Board received no notice that neither GLEA nor Mary P. Sinclair would attend the prehearing conference.

Thereafter, on September 23, 1982 the Board issued an Order to GLEA to Show Cause why it should not be dismissed as a party for its default in failing to attend the prehearing conference of September 21, 1982. That Order was served on GLEA's representative Mary P. Sinclair by Certified Mail on September 27, 1982. Neither GLEA nor anyone on its behalf filed any response to the Order to Show Cause.

Applicable Law

The NRC Rules of Procedure provide in pertinent part as follows:

> "On failure of a party . . . to appear at a hearing or prehearing conference . . . the Commission or the presiding officer may make such orders in regard to the failure as are just, including, among others, the following:
>
> (a) Without further notice, find the facts as to the matters regarding which the order was made in accordance with the claim of the party obtaining the order, and enter such order as may be appropriate; or
>
> (b) Proceed without further notice to take proof on the issues specified."

10 CFR §2.707.

The Order to Show Cause notified GLEA that unless it showed good cause, within 20 days, for its default in failing to attend the prehearing conference, it would be dismissed as a party. Thus, GLEA was fully advised of the consequences of a failure to respond. Nevertheless, GLEA did not respond to the Order to Show Cause.

We are mindful that dismissal of a party is the ultimate sanction applicable to an intervenor. On the other hand, where a party fails to carry out the responsibilities imposed by the fact of its participation in the proceeding, such party may be found to be in default and its contentions dismissed. *Boston Edison Company, et al.* (Pilgrim Nuclear Generating Station, Unit No. 2), LBP-76-7, 3 NRC 156 (1976). We find that GLEA's unexplained failure to attend the prehearing conference and failure to respond to the Order to Show Cause are serious lapses which indicate that it should no longer retain its status as a party in this proceeding.

ORDER

WHEREFORE, IT IS ORDERED this 8th day of November, 1982, at Bethesda, Maryland, that Great Lakes Energy Alliance is in DEFAULT for failure to attend a prehearing conference on September 21, 1982; that it has not established good cause why it should not be DISMISSED as a party herein; that it is DISMISSED as a party herein; and that its three previously admitted contentions are also DISMISSED.

IT IS FURTHER ORDERED that since there is no longer any party or contention opposed to the operating license amendment in this proceeding, this proceeding is hereby DISMISSED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James A. Laurenson, Chairman
ADMINISTRATIVE LAW JUDGE

Dr. George C. Anderson
ADMINISTRATIVE JUDGE

Dr. M. Stanley Livingston
ADMINISTRATIVE JUDGE

Cite as 16 NRC 1597 (1982) LBP-82-102

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2)

November 8, 1982

The Licensing Board reviews a set of interrogatories addressed to the Staff concerning the Standby Liquid Control System Contention. The Board finds that certain questions are irrelevant because they relate to Anticipated Transient Without Scram generally, and not to the admitted contention. However, the Board decides that intervenor is seeking necessary information and phrases its own questions so that information necessary to a complete record can be obtained in an efficient manner, without unduly burdening Staff.

RULES OF PRACTICE: DISCOVERY (INFORMATION ABOUT OTHER PLANTS)

Intervenor may obtain information about other, arguably analogous plants in the course of discovery.

RULES OF PRACTICE: BOARD QUESTIONS INTERPRETING INTERVENOR'S INTENT

When the Board's review of the intervenor's interrogatories persuades it that there may be substantial gaps in the record resulting from these requests, the Board may phrase its own questions to fill the gaps.

TECHNICAL ISSUES DISCUSSED

Standby Liquid Control System
Human Error
Anticipated Transient Without Scram

MEMORANDUM AND ORDER

(Concerning Motion to Compel: Standby Liquid Control System)

On September 20, 1982, Ohio Citizens for Responsible Energy (OCRE) filed a motion to compel Cleveland Electric Illuminating Co., *et al.* (applicant) to answer interrogatories concerning the possible need for an automated standby liquid control system (SLCS). (The motion initially requested that the Staff of the Nuclear Regulatory Commission also be compelled to answer, but OCRE has informed us by telephone that it intends to file a separate motion concerning that portion of its request.)

Our review of the motion persuades us that OCRE has demonstrated a need to obtain information and has indicated, through its questions and supportive filings, the nature of the information it needs. However, our review of the questions that have been asked leaves us with the uncomfortable feeling that the answers will leave substantial gaps of essential information. Consequently, our principal response to OCRE's Motion to Compel is to propound Board questions that should be answered before the deadline for filing direct testimony. *See Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), ALAB-124, 6 AEC 358, 362 (1973) (a Licensing Board is required by the Atomic Energy Act to ensure that the public health and safety are not compromised, and it cannot simply sit back like an umpire). In addition, we have considered the merits of OCRE's specific requests and have granted a portion of the motion to compel.

We recognize that some of the information desired by the Board has already been supplied in response to OCRE interrogatories. However, it would be helpful to us to have a coherent set of answers to our questions, without regard to whether some of the information has already been filed. Our questions, which follow, should be answered fully and completely:

1. List each of the Anticipated Transient Without Scram (ATWS) precursor events that might call for activation of the Perry Nuclear Power Plant's (Perry) SLCS and for which there is some research or opinion, either among applicant's employees or in published literature, that the event may require activation of the SLCS (at Perry or at another boiling water reactor). (You may indicate your best estimate of the expected frequency with which each ATWS precursor event might lead to a demand on the SLCS.)
2. For each of the events listed in 1., above:
   - (a) provide a description or detailed chart that indicates the operator actions that are expected to take place from the beginning of the event until the point at which the operator may have to decide to activate the SLCS. Describe each of the actions in enough detail for OCRE to be able to know how time-consuming these actions are. Be sure to describe in detail the operation of the Alternate Rod Insertion System.
   - (b) provide a fault-tree analysis, or similar verbal discussion, indicating the instruments on which the operator must rely and the likelihood of various instrument, instrument-reading or diagnostic errors that the operator might make in implementing the expected operator actions indicated in (a).
   - (c) indicate your basis for believing that, in the scenarios covered in (a) and (b), the operator may be expected to complete the expected actions and have adequate time to activate the SLCS.
   - (d) indicate your basis for believing that, in the scenarios covered in (a) and (b), the operator may be expected to confidently and correctly diagnose the problems existing in the reactor and to activate the SLCS in a timely fashion.
   - (e) indicate any uncertainties concerning the ability of operators to make correct diagnoses and take correct actions in each of these situations in which SLCS activation is called for, even when these situations may be complicated by one or more instrument failures. Describe each of the plant parameters that the operators must follow, the changes in those parameters that would occur in each relevant event, and the inferences the operator would need to make from one or more parameters in order to reach a correct conclusion.
   - (f) discuss the likelihood of power oscillations during an ATWS and the effect of such oscillations on the ability of operators to make correct diagnoses and take correct actions. Would the possibility of power oscillations favor a manual or an automated SLCS?

(g) indicate your best estimate of the likelihood that an operator might incorrectly fail to activate the SLCS, and provide the basis for your estimate.

3. What is the overall probability that the operator will be called on to activate the SLCS? What is the basis for your belief?
4. What is the total cost to the company for each incorrect activation of the SLCS, including cleanup costs and costs of lost power generation?
5. How frequently will operators be confronted with a situation in which they might perceive that they needed to decide whether or not to activate the SLCS? In what percentage of these situations should they decide to activate the SLCS?
6. What have you done to investigate whether there are situations in which operators might have difficulty deciding whether or not to activate the SLCS? How long from the occurrence of an ATWS would you expect it to take for the control room instruments to register the occurrence of an ATWS? How much additional time would it take for operators to decide whether to activate the SLCS in ambiguous situations, and how much additional time would it take to effectuate their decision? How long (total) do you expect it would take for the operators to activate the SLCS in unambiguous situations? What percentage of ATWS events do you expect to result in ambiguous instrument readings?

In addition to framing our own questions, we have considered the merits of each OCRE interrogatory, even though the set of interrogatories was prefaced with a statement of purpose applicable generally to ATWS events and not limited to the SLCS contention. We have decided that interrogatory 20, dealing with operator actions that might be taken prior to deciding whether to manually actuate the SLCS, should be answered. In response to interrogatory 28, applicant should provide information on the differential risk, if any, that boration would be defeated by subsequent dilution when a manual SLCS is employed, as contrasted to when an automated SLCS is employed. Similarly, applicant should respond to interrogatory 31 by explaining whether the expected cost of inadvertent activation of an automated SLCS could be reduced by using a different neutron poison, other than boron.

Interrogatories covering the following subjects are denied as irrelevant to the admitted contention: modifications of the scram discharge volume, applicant's total ATWS mitigation program, a definition of scram failure and the sources of loss of control of reactivity, a listing of all transients capable of initiating reactor scram in a BWR/6, a description of all scram failures, a description of the Reactor Protection System and the Alternate Rod Insertion System, the probability and risk of ATWS, a description of all operator actions in ATWS, the conditions for activation of the recirculation pump trip and its conformity to appropriate standards, the reliability of the alternate rod insertion system and the reactor protection system and the standby liquid control system (nonconformity to Appendix C of Volume 3, NUREG-0460 is not relevant to the comparative advantage of a manual or automated system), the probabilities of ATWS, the efficacy of the ATWS mitigation system, dependence of ATWS or scram systems on electrical power, and power oscillations.

We reject applicant's argument, on page 14 of its answer to the motion to compel, that information not directly relevant to Perry is irrelevant for purposes of discovery. At the discovery stage, information about other reactors may well inform OCRE about what analyses to perform on the Perry configuration. Furthermore, if there is enough similarity among relevant systems, analyses of other plants may prove to be admissible in this case, and draft system operating procedures that are relevant to the admitted interrogatories should be produced because changes from the draft to the present system may help to inform OCRE of areas of uncertainty on which to concentrate its analytical and litigation efforts. In particular the draft system operating procedure given to the BWR owner's group should be produced.

We are aware that the Board's questions have narrowed the scope of OCRE's requests about ATWS events considerably, in the interest of reasonably limiting the scope of discovery to matters relevant to the admitted contention. In the event that OCRE has reason to believe that specific ATWS events should have been included in applicant's response to Board questions, it will be permitted to inquire further into the omission. In addition, if OCRE has reason to believe that one or more of the precursor sequences identified by applicant is particularly important to its argument, it may pursue the basis for applicant's conclusions concerning the frequency of occurrence of these sequences. In the interest of efficiently concluding this process, therefore, applicant should include complete documentation of the sources of its information concerning expected probabilities.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 8th day of November, 1982,

ORDERED

(1) Cleveland Electric Illuminating Company, *et al.*, (applicant) shall fully answer the questions set forth in the accompanying memorandum and shall file its answers by the deadline for filing direct testimony.

(2) Applicant also should answer OCRE interrogatories and discovery requests to the extent that the Board has concluded, in the course of this decision, that additional answers should be forthcoming.

(3) In all other respects, the Motion to Compel Discovery from Applicant, filed by Ohio Citizens for Responsible Energy on September 20, 1982, is denied.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 1603 (1982) LBP-82-103

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Hugh K. Clark, Chairman
Dr. George A. Ferguson
Dr. Oscar H. Paris

In the Matter of **Docket No. 50-461-OL**

ILLINOIS POWER COMPANY, *et al.*
(Clinton Power Station,
Unit No. 1) **November 10, 1982**

The Licensing Board admits two supplemental contentions submitted by the Intervenor, and it denies admission of seven contentions by the Intervenor and two issues proposed for litigation by the State of Illinois. The Board also deletes one previously admitted contention and grants a motion for summary disposition of one contention.

RULES OF PRACTICE: LITIGABLE ISSUES; HYDROGEN CONTROL

Commission guidance in TMI-1 Restart, *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674 (1980) permits the litigation of hydrogen control in individual cases under 10 CFR Part 100 if it is determined that there is a credible loss of coolant scenario entailing hydrogen generation, hydrogen combustion, containment breach or leaking, and offsite radiation doses in excess of the Part 100 guideline values. See *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2), LBP-81-13, 13 NRC 652 (1981) and ALAB-669, 15 NRC 453 (1982); and *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 & 2), LBP-82-15, 15 NRC 555 (1982) and ALAB-675, 15 NRC 1105 (1982).

RULES OF PRACTICE: LITIGABLE ISSUES; FINANCIAL QUALIFICATIONS

Contentions related to financial qualification of the Applicant for a construction permit or an operating license for production or utilization facilities shall not be considered. See 47 *Fed. Reg.* 13750 *et seq.* (March 31, 1982) and revised 10 CFR §2.104(b)(1)(iii) and 10 CFR §2.104(c)(4).

RULES OF PRACTICE: LITIGABLE ISSUES; GENERIC ISSUES

The Appeal Board provides guidance concerning the litigability of generic issues. In *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 773 (1977) it states:

> To establish the requisite nexus between the permit or license application and a TSAR item (or Task Action Plan), it must generally appear both (1) that the undertaken or contemplated project has safety significance insofar as the reactor under review is concerned, and (2) that the fashion in which the application deals with the matter in question is unsatisfactory, that because of the failure to consider a particular item there has been an insufficient assessment of a specific type of risk for the reactor, *or* that the short-term solution offered in the application to a problem under staff study is inadequate. [footnote omitted]

RULES OF PRACTICE: LITIGABLE ISSUES; NEEDS FOR POWER OR ALTERNATE ENERGY SOURCES

New paragraph 10 CFR §51.53(c), effective March 22, 1982, prohibits admission of contentions proffered by a party concerning need for power or alternate energy sources for the proposed plant in operating license hearings. See 47 *Fed. Reg.* 12943 (March 26, 1982).

RULES OF PRACTICE: LITIGABLE ISSUES; PSYCHOLOGICAL STRESS

Contentions alleging psychological stress resulting from Commission-licensed activities must meet three criteria: 1) the impact must consist of post-traumatic anxieties, 2) the impact must be accompanied by physical effects, and 3) the post-traumatic anxieties must have been caused by fears of recurring catastrophe. See the Commission's statement of policy issued July 16, 1982, 47 *Fed. Reg.* 31762 (July 22, 1982).

MEMORANDUM AND ORDER

(Ruling on Proposed Supplemental Contentions, Proposed Issues, Motion for Summary Disposition and Dismissing a Previously Admitted Contention)

SUMMARY

In this Memorandum and Order, the Licensing Board rules on the acceptance for litigation of proposed contentions of the Intervenor, Prairie Alliance (PA), proposed issues of the State of Illinois (Illinois), and dismisses two previously accepted contentions.

More specifically Proposed Contentions of PA Nos. 1 (Beyond Design Basis Accidents), 2 (Alternatives to Nuclear Power), 3 (Need for Power), 5 (Systems Interaction), 6 (Hydrogen Control), 7 (Psychological Stress), and 8 (Socioeconomic Effects) were denied admission. PA's Proposed Contention No. 4 (General Electric Withdrawal from Market) was admitted. Illinois' Proposed Issues 1 (QA/QC program) and 2 (Adverse Systems Interaction) were denied admission. Previously allowed PA Contention 3 (Financial Qualification of Applicant, Illinois Power, *et al.* (IP)) was deleted because of change in 10 CFR §2.104(c)(4). Motion to Dismiss was granted as to previously allowed PA Contention No. 5 (ATWS), as amended by parties.

RULINGS ON PROPOSED SUPPLEMENTAL CONTENTIONS AND PROPOSED ISSUES

Supplemental Contention No. 1

PA's Proposed Supplemental Contention No. 1 reads as follows:

> 1. Beyond Design Basis Accidents
>
> Neither the Applicant nor the NRC Staff in the SER or the DES disclose what measures have been taken or are planned to assure public health and safety in the event of 'beyond design basis accidents,' formerly known as 'Class 9' accidents, especially as regards additional safety features and such cases as might warrant such features.

In its Memorandum and Order of May 29, 1981, the Board denied admission of old Contention 5, concerned with beyond design basis accidents, on the ground of lack of specificity required by 10 CFR §2.714, "without prejudice to the proffer of a specific contention after Prairie Alliance has had a chance to study the Staff's FES and SER" (LBP-81-15, 13 NRC 708, 713). It was there pointed out that the Commission's Policy Statement of June 13, 1980, 45 *F.R.* 40101, requires the

NRC Staff, not the Applicants, to consider the environmental consequences of such accidents in the Environmental Statement.

Both the Staff and IP object to this proposed issue as lacking in specificity. We do not agree. The contention is that the Staff failed, in the SER and the DES, to "disclose what measures have been taken or are planned to assure the public health and safety" in the event of such accidents. But this specific allegation is not in accordance with the facts. The Staff's DES discusses the matter in detail beginning at page 5-41 and ending at page 5-65. On page 5-65, the following statement appears:

> A comprehensive 'NRC Action Plan Developed as a Result of the TMI-2 Accident,' NUREG-0660, Vol. 1, May 1980, collects the various recommendations of those groups and describes them under the subject areas of: Operational Safety; Siting and Design; Emergency Preparedness and Radiation Effects; Practices and Procedures; and NRC Policy, Organization and Management. The action plan presents a sequence of actions, some already taken, that will result in a gradual increased improvement in safety as individual actions are completed. The Clinton station is receiving and will receive the benefit of these actions on the schedule indicated in NUREG-0660.

The Staff's SER, pages 6-18 *et seq.*, also discusses the topic. It is clearly disclosed in both the DES and the SER that the Staff is actively pursuing the program detailed in NUREG-0660. Therefore, proposed Contention No. 1 is rejected as being without basis.

The Staff and the IP also attack the proposed contention as a mere restatement of a previously denied contention. PA was permitted to file proposed contentions based upon the SER and the DES during the telephone conference of March 15, 1982. This contention is based on the SER and the DES. The Board does not agree with the position of the Staff and the IP on this issue.

IP also opposes this and the other proposed contentions as not meeting the requirements of 10 CFR §2.714(a)(1) concerning late-filed contentions. Since contentions based on the SER and the DES could not have been filed sooner, the Board does not agree that this is a late-filed contention. See *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982).

Supplemental Contention Nos. 2 and 3

PA's Proposed Supplemental Contention No. 2 alleges inadequate consideration of alternatives to the nuclear power plant.

PA's Proposed Supplemental Contention No. 3 alleges inadequate assessment of the need for power and production costs of the facility.

Amendments to 10 CFR §50 (47 *Fed. Reg.* 12943, March 26, 1982) and amendments to 10 CFR §2.105 (47 *Fed. Reg.* 13793, March 31, 1982) preclude consideration of Contention Nos. 2 and 3 in this proceeding. PA admits the truth of this assertion in its brief in support of supplemental contentions dated April 12, 1982 at pages 2-3, and also made the same admission during the Third Special Prehearing Conference on May 4, 1982 (Tr. 252). See also *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-671, 15 NRC 508 (1982).

Admission of Proposed Contention Nos. 2 and 3 is denied.

Supplemental Contention No. 4

PA's Proposed Supplemental Contention No. 4 reads as follows:

> 4. General Electric Withdrawal from Market
>
> General Electric recently announced that they will withdraw from the nuclear hardware market. The effects of this withdrawal have not been considered by the Applicant or the Staff. This withdrawal is especially germane in light of Applicant's lack of experience in operating nuclear plants and its future needs relative to plant servicing and design modifications mandated by present and future Commission regulations and orders.

Attached to the IP's response of April 12, 1982 to the proposed supplemental contentions of PA as Exhibit 1 is a copy of a letter dated April 2, 1982 from Mr. W. H. Bruggeman, Vice President of General Electric, to Mr. Leonard J. Koch, Vice President of Illinois Power. In part, the letter states:

> In summary, General Electric Company has no expectation of abandoning the nuclear business. IPC and other BWR owners can look forward to the continuing support and expertise of the General Electric Company.

In a telephone conference on June 4, 1982, counsel for PA stated that he was not satisfied that the above-noted letter gave assurance that General Electric intends to make its services available in the future to make design modifications mandated by present or future Commission regulations or orders. PA is willing to withdraw this contention if satisfied that General Electric is not discontinuing hardware design modifications. In taking this stand, PA is iterating remarks on page 7 of PA's Brief in Support of Supplemental Contentions dated April 12, 1982. IP has taken no steps to reassure PA on this point. The contention is based on an alleged new event, the withdrawal of General Electric from the nuclear hardware market. It is specific and pertinent. We have not weighed the factual evidence presented by the parties because such evidence should not be taken into consideration in ruling on admissibility of contentions. *Mississippi Power and Light Company* (Grand Gulf Nuclear Stations, Units 1 and 2), ALAB-130, 6 AEC 423 (1973), and *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542 (1980).

Proposed Supplemental Contention 4 is admitted.

Supplemental Contention No. 5

PA's Proposed Supplemental Contention 5 reads as follows:

> 5. Systems Interaction
>
> The Applicant and the NRC Staff inadequately consider the interaction of systems installed by engineers with differing functional specialties, such as civil, electrical, mechanical, and nuclear. The SER reveals that the Applicant has not yet described a comprehensive program that separately evaluates all structures, systems and components important to safety for the three categories of adverse systems interaction (spatially coupled, functionally coupled, and humanly coupled). These programs are especially significant in the light of Applicant's quality assurance and quality control problems during construction of the Clinton Plant.

The proposed contention attempts to raise a generic issue (see NUREG-0606, Task A-17 (August 20, 1982)). In *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 773 (1977), the decision of the Appeal Board affords guidance as to the validity of a contention based upon a generic issue. It states:

> To establish the requisite nexus between the permit or license application and a TSAR item (or Task Action Plan) it must generally appear both (1) that the undertaken or contemplated project has safety significance insofar as the reactor under review is concerned, and (2) that the fashion in which the application deals with the matter in question is unsatisfactory, that because of the failure to consider a particular item there has been an insufficient assessment of a specific type of risk for the reactor, *or* that the short-term solution offered in the application to a problem under staff study is inadequate. (footnote omitted)

Although the cited case dealt with an application for a construction permit, the Appeal Board enunciated the same guidance for an application for an operating license. See *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978). The proposed contention fails to meet either test (1) or (2) laid down by the Appeal Board. Admission of Proposed Supplemental Contention No. 5 is denied.

Supplemental Contention No. 6

PA's Proposed Supplemental Contention No. 6 reads as follows:

> 6. Hydrogen Control
>
> The Applicant and staff fail to adequately protect against hydrogen accumulation and hydrogen explosions or burns in the Clinton reactor. No system has yet been installed. There is no consideration of the

contingency of GE's role in the owner's group formed to evaluate the hydrogen concerns for MARK III containments, in the light of GE's announced withdrawal from the marketplace.

BACKGROUND

10 CFR §50.44 sets standards for hydrogen control that each facility must meet before being licensed. As a result of the TMI-2 accident, 10 CFR §50.44 has been revised on an interim basis for Mark I and Mark II BWRs (46 *Fed. Reg.* 58484-6, December 2, 1981). A similar revision for Mark III BWRs (of which Clinton is one) is being considered. Meanwhile, the standards in 10 CFR §50.44 may not be attacked in a proceeding such as the present one. In *TMI-1 Restart*, the Commission refused to waive the application of 10 CFR §50.44 standards for TMI-1, but found that:

> quite apart from 10 CFR §50.44, hydrogen gas control could properly be litigated in this proceeding under 10 CFR Part 100. Under Part 100, hydrogen control measures beyond those required by 10 CFR §50.44 would be required if it is determined that there is a credible loss-of-coolant accident scenario entailing hydrogen generation, hydrogen combustion, containment breach or leaking, and offsite radiation doses in excess of Part 100 guideline values.

Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674 at 675 (1980) (*TMI-1 Restart*).

By motion of June 9, 1980, amended August 15, 1980, Intervenor, Carolina Environmental Study Group, sought to reopen the McGuire Operating License Proceeding in *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2) LBP-79-13, 9 NRC 489 (1979), to include consideration of hydrogen control under the terms of the Commission decision of May 16, 1980 in *TMI-1 Restart* cited above. The Board having jurisdiction in that case reopened the proceeding and, after a hearing, found that there was reasonable assurance that in the event of a TMI-2 type accident at McGuire, substantial quantities of hydrogen (in excess of the design basis of 10 CFR §50.44) would not be generated. The Board also found:

> the actions taken and the procedures adopted by Duke Power Company subsequent to the TMI accident provide reasonable assurance that (a) in the event of a TMI-type accident at McGuire, the likelihood of ECCS operations being prematurely terminated by the control room operating staff is so remote that such an accident scenario is not credible; (b) in the unlikely event of premature termination of the ECCS, operations will be reinitiated within sufficient time to prevent the generation of hydrogen in excess of 10 CFR §50.44; and (c) the McGuire facility can be operated without undue

> risk to the public health and safety with respect to possible hydrogen generation resulting from accidents of the type which occurred at TMI-2.

See *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2) LBP-81-13, 13 NRC 652, 674 (1981) (reopened operating license proceeding).

On appeal, the Appeal Board held that in admitting the contention the Licensing Board quite properly relied on the Commission's ruling in *TMI-1 Restart*. The Appeal Board also found that there was reasonable assurance that the McGuire plant could be operated, without endangering the health and safety of the public, during the short term while the Applicant and Commission continued to explore the adequacy of the existing hydrogen mitigation and control system and of possible long-term alternatives to it. The Appeal Board's March 30, 1982 decision, *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453 (1982) is a detailed discussion of the hydrogen control problem, the propriety of admission of the pertinent contention, the record in the McGuire case, and the Licensing Board's decision.

In a shorter opinion dated May 17, 1982, *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, the Appeal Board had before it a motion for directed certification and ruling on the March 3, 1982, admission by the Licensing Board of a contention on hydrogen control (LBP-82-15, 15 NRC 555). The Licensing Board had denied previously the admission of the contention on hydrogen control submitted March 5, 1981 (nearly 10 months after the Commission's decision in *TMI-1 Restart*) because the contention lacked a loss-of-coolant scenario required in that decision. The Licensing Board warned the Intervenors that, if a new contention concerning hydrogen control should be submitted later, they would have to satisfy the criteria of 10 CFR §2.714(a)(1) governing late-filed contentions (LBP-81-24, 14 NRC 175, 207-08 (1981)). More than five months later the Intervenors filed a revised contention, which was admitted over strong protests by the Applicants. The Appeal Board denied the Applicants' motion for certification.

There is no indication that Prairie Alliance is at all familiar with the background facts stated above. The contention was filed on March 30, 1982, and hence lack of knowledge of the Appeal Boards' decisions in the *McGuire* case (ALAB-669, March 30, 1982) and the *Perry* case (ALAB-675, May 17, 1982) is understandable. However, the Commission's decision in *TMI-1 Restart* (CLI-80-16, May 16, 1980) and the Licensing Boards' decisions in the *McGuire* case (LBP-81-13, May 26, 1981 and July 28, 1981 (unpublished)) and the *Perry* case (LBP-82-15, March 3, 1982) were available to PA in advance of its submission of its supplemental contentions. Yet there is not the slightest suggestion of a credible loss-of-coolant scenario, which is mandatory in view of *TMI-1 Restart*.

Admission of Contention No. 6 is denied. Should PA later submit an appropriate contention directed to this subject matter, the Intervenor would have to satisfy the criteria of 10 CFR §2.714(a)(1) governing late-filed contentions.

Supplemental Contention No. 7

PA's Proposed Supplemental Contention No. 7 reads as follows:

> 7. Psychological Stress
>
> The Applicant and the NRC staff fail to adequately consider the psychological stress and trauma, and mitigation thereof, which will be experienced by persons residing in DeWitt and surrounding counties caused by: (a) the operation of the Clinton Plant; (b) emissions of radioactivity, accidental and planned, by the plant; (c) transportation of spent nuclear fuel from the plant through said communities; (d) on site storage of spent nuclear fuel; (e) possibility of future accidents involving occurrences, design basis accidents and beyond design basis accidents, including, but not limited to, events such as the 1979 TMI near meltdown; and (f) emergency and/or evacuation planning.

In its brief dated April 12, 1982 in support of its proposed Supplemental Contention, at page 7, PA withdrew this contention pending further action by the U.S. Court of Appeals for the District of Columbia in *People Against Nuclear Energy* v. *NRC* (*PANE* v. *NRC*), 678 F.2d 222, without waiving its right to resubmit the contention subsequent to final decision in that case.

The U.S. Court of Appeals for the District of Columbia issued, in *PANE* v. *NRC*, an oral Amended Judgment dated April 2, 1982 with written opinion filed May 14, 1982. The majority held that psychological health effects are cognizable under NEPA and remanded the case with instructions that NRC determine whether to prepare a supplemental EIS. PA resubmitted Proposed Supplemental Contention No. 7 on June 16, 1982.

On July 16, 1982, the Commission issued a statement of policy to provide guidance on the applicability of the *PANE* v. *NRC* decision to NEPA issues raised in proceedings other than the Three Mile Island Unit 1 restart proceedings. See 47 *Fed. Reg*. 31762, July 22, 1982. A copy of this Statement of Policy was sent to all parties to this proceeding by the Staff on July 19, 1982. As the Commission states, contentions alleging psychological stress resulting from Commission-licensed activities must meet three criteria:

> First, the impacts must consist of "post-traumatic anxieties," as distinguished from mere dissatisfaction with agency proposals or policies. Second, the impacts must be accompanied by physical effects. Third, the "post-traumatic anxieties" must have been caused by "fears of recurring catastrophe." This third element means that some kind of nuclear accident must already have occurred at the site in question, since the majority's holding was directed to "post-traumatic" anxieties and by fears of a "recurring" catastrophe.

Statement of Policy at 4.

There has not been any kind of a nuclear accident at the Clinton site. Hence, there cannot have been post-traumatic anxieties caused by fear of a recurring catastrophe. Admission of Proposed Supplemental Contention No. 7 is denied.

Supplemental Contention No. 8, Socioeconomic Effects

PA's Proposed Supplemental Contention No. 8 deals with socioeconomic effects of operation. Matters considered in the NEPA analysis for the construction permit application may not be relitigated during the proceedings for an operating license, unless some significant change in facts is demonstrated.

The socioeconomic effects of construction and operation of the facilities were considered during the construction permit proceeding concerning the Clinton Plant in Applicant's Environmental Report (ER-CP). They were also considered in the Staff's Draft Environmental Statement (DES-CP), and in the Staff's Final Environmental Statement (FES-CP). The Salt Creek Association (SCA) successfully sought intervention in the CP proceeding. Three of its proposed contentions concerning socioeconomic matters survived prehearing activities, and extensive testimony was taken on this topic.

In its partial initial decision, LBP-75-59, 2 NRC 579 (1975), the Licensing Board recited the FES-CP summary of socioeconomic items considered. The summary specifically mentioned agriculture, timber, grazing, hunting, fishing, water use, and the impact of 1200 construction workers' families on the area. The summary also dealt with the socioeconomic effect of operation of the Clinton Plant. The Staff, in the FES-CP, concluded that, subject to certain limitations for the protection of the environment, the action called for under NEPA and Appendix D to 10 CFR Part 50 was the issuance of a construction permit for the facilities. The Licensing Board concluded that the NEPA requirements had been met. In its second partial initial decision on the Clinton Plant, the Licensing Board reaffirmed its position as to NEPA, decided safety matters in favor of Applicant, and ordered the issuance of a construction permit. See LBP-76-6, 3 NRC 135 (1976).

The Appeal Board summarized the SCA contentions thus: "In short, the intervenors opposed construction of the facility on exclusively socioeconomic grounds." The Licensing Board was affirmed, ALAB-340, 4 NRC 27, 30 (1976).

The DES-OP Li.2.2. p. 4-2 to 4-4 details the increased recreational opportunities provided by 10,250 acres of land leased to the Illinois Department of Conservation (IDOC) to manage as a recreation/conservation area. Lake Clinton offers year-round extensive recreational facilities. IDOC estimates that the site was visited by 520,212 persons in 1980, and expects the number of visitors to increase to 750,000 in 1981, and to 1,000,000 in 1983.

We turn now to the specific items alleged to show that the economic and social effects of station operation have not been adequately assessed. Items A, B and G, while vaguely worded, seem to imply that there should be a consideration of the effect of taxes on the Clinton Plant, and a decrease of taxes upon decommissioning of the plant and upon different use of the land. Such taxes have no place in the NEPA Cost Basis Analysis of a project. *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), ALAB-179, 7 AEC 159, 177 (1974); *Arizona Public Service Company, et al.* (Palo Verde Nuclear Generating Station, Units 1, 2, and 3), ALAB-336, 4 NRC 3, 4 (1976); and *Illinois Power Company* (Clinton Power Station, Unit Nos. 1 and 2), ALAB-340, 4 NRC 27, 49 (1976).

Item A deals with the impact of Applicants' ownership of the Clinton Plant. As has been indicated above, this item was fully dealt with in the CP proceeding.

Items C and D deal with the impact of the recreational use of Clinton Lake. This was considered in the FES-CP. Opportunities for hunting, fishing and other recreational activities were increased, not diminished. The DES-OL at section 4.2.2 indicates the magnitude of the use of the increased opportunity.

After alleging adverse effects of loss of recreational opportunities in Item D, PA alleges in Item E adverse effects of increased recreational opportunities, such as crowding, littering, vandalism, etc. While such possible effects are postulated, none of them are alleged to have occurred. Item E fails to meet the reasonable specificity of 10 CFR §2.714. Moreover, since the State of Illinois operates the recreation facility, policing the area is the responsibility of the State of Illinois.

Item F deals with the impact of reallocation of IDOC funds to the Clinton Lake area from other areas, especially the nearby Welden Spring State Park. Funds for recreational purposes at both sites are provided by the State of Illinois. The amounts of such funds from year to year and their allocation are matters under the control of the State of Illinois. This is not an appropriate topic for consideration here because state appropriations cannot be predicted or controlled by IP. Moreover, Item F does not state with reasonable specificity the nature and effect of said alleged reallocation.

Item H deals with the impact of operational personnel on transportation and social services facilities in DeWitt County. The FES-CP dealt with the impact of a much larger number of construction personnel and found the impact minimal. Moreover, the DES-OL Section 5.8 deals with the impact of the operational personnel. DES-OL Section 4.2.2 details the road changes which have been made to accommodate the needs of the Clinton Plant.

In summary, the socioeconomic aspects of the construction and operation of the Clinton Plant were extensively explored in the FES-CP proceeding. They were reconsidered in the DES-OL proceeding. The allegations in Contention No. 8 of inadequate assessment by Applicants and Staff are not reasonably specific in that they are based on speculation. Admission of Proposed Supplemental Contention No. 8 is denied.

Illinois has proposed two issues for litigation. The first proposed issue reads as follows:

Illinois' Proposed Issue No. 1

1. The Applicants have failed to establish and execute a Quality Assurance (QA)/Quality Control (QC) program during construction of CPS-1 that adheres to the criteria set forth in 10 CFR 50, Appendix B. Numerous problems in the QA/QC program have been discovered during construction of CPS-1, resulting, in some instances, in the termination of construction work. Many of these problems directly affect the construction at CPS-1 of safety-related systems. Yet, the NRC Staff in its SER has failed to adequately address these problems. Thus, there is no assurance that CPS-1 has been constructed in such a way that it will not endanger the health and safety of the public.

This proposed issue essentially follows allowed PA's Contention No. 2, which reads as follows:

2. The CPS should not be licensed to operate until IP has demonstrated, as required by 10 CFR 50.34(b) and Part 50, Appendix B, that it possesses sufficient management and technical qualifications to assure that the CPS will be (a) maintained in a safe condition while operating normally, or (b) safely operated and controlled in the event of an abnormal occurrence or emergency, or (c) permanently shut down and maintained in a safe condition.

   Repeated Quality Assurance (QA) and Quality Control (QC) problems are noted in NRC Region III Inspection Reports. Specifically, IP's QA and QC program is consistently deficient in its ability to assure (1) a sufficient number of experienced personnel, (2) integrity of welding procedures, and (3) numerous other QA and QC inadequate consideration of alternatives to the nuclear plant. The DES and SER present no examination or disclosure as to the economic and environmental improvements in coal, conservation, solar and wind energy technologies from the time of construction permit to the present.

Illinois attempted to establish this proposed issue on results from its study of the SER and, hence, that its filing is timely. This attempt fails. The SER discusses the QA program as it is set forth on paper in the FSAR. Although it mentions the existence of open matters, it does not really address the question of whether or not the Applicants are satisfactorily carrying out the program. (SER Section 17, pages 17-1 to 17-6). However, Staff's Office of Inspection and Enforcement does inspect construction activities and reports. Where weaknesses or errors which substantially affect safety are detected, the Staff requires the Applicants to take appropriate action. Deliberate or careless failure of Applicants to adhere to the program is the basis for the imposition of penalties. Activities of the Office of Inspection and Enforcement are made public both in Washington and at the public document room and near the site. Illinois was aware of this availability of these records from a time preceding its admission to this proceeding. Its petition for leave to intervene, filed November 3, 1980, on pages 2 and 3, states:

> Illinois has no assurance that the Station will be operated in a safe manner. At various times since at least 1978 representatives of the Commission's Office of Inspection and Enforcement have inspected the Station and discovered that certain activities there were not in compliance with the Commission's requirements and the Applicant's design plans. These investigations have uncovered problems that raise questions of whether the operation of the Station will affect public health and safety.

Thus, Illinois' concern in this matter did not arise from a study of the SER but has been in existence from November 1980.

AS AN INTERESTED STATE, HAVING ELECTED TO FILE ISSUES TO BE LITIGATED, ILLINOIS MUST FOLLOW THE PROCEDURAL REQUIREMENTS' GOVERNING PARTIES ADMITTED UNDER 10 CFR §2.714

Illinois urges that the five "lateness" factors to be considered pursuant to 10 CFR §2.714(a) do not apply to statements of issues offered by a state, citing *Cincinnati Gas and Electric Company, et al.* (William H. Zimmer Nuclear Station), LBP-79-22, 10 NRC 213 (1979). In taking this position, the Licensing Board in the Zimmer case ignored the Appeal Board ruling in *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 768 (1977) that "Once let in, however, an 'Interested State' must observe the procedural requirements applicable to other participants."

The five factors applying to late filings will be considered pursuant to 10 CFR §2.714(a) with regard to this proposed issue.

(i) Good Cause for Failure to File on Time

Illinois argues that the availability of new information or documents is a valid reason for accepting new contentions. However, the proposed issue is broad enough to include every failure of Applicants' QA/QC program from the inception of construction. It is in no way limited to items of recent date. As broadly as drafted, the contention does not rest on new information or documents. No good cause for failure to file on time has been advanced by Illinois.

(ii) The Availability of Other Means Whereby Illinois' Interests Will Be Protected

Illinois argues that there is no other means or proceeding available to protect its interest. This misses the meaning of the second factor. The gist of allowed Contention No. 2 and the proposed issue, which are presented above, is the same. Both may be stated thusly: "Safe operation of the plant will not be possible because of failures of Applicants' QA/QC program during construction."

Illinois, as a party to this proceeding, can protect its own interest by its own participation in this proceeding. In the special prehearing conference held May 4, 1982 (Tr. 271), Illinois admits that the factual basis for Contention No. 2 and proposed issue is essentially the same. Illinois argues that Proposed Issue No. 1 "refers to construction of the plant itself rather than the operation, while the PA's Contention No. 2 calls operation into question." The present proceeding is concerned with an application for an operating license and not with a construction permit. Moreover, references to the QA/QC program in the wording of both issues are to construction activities. As noted above, Contention No. 2 covers all the ground of Illinois' Proposed Issue No. 1.

(iii) The Extent to Which Illinois' Participation May Reasonably Be Expected to Assist in Developing of a Sound Record

This factor appropriately applies to a petition for intervention rather than to admission of the proposed issue. Since, the proposed issue is covered by an admitted contention, Illinois' contribution to the record will be neither more nor less whether or not the Proposed Issue No. 1 is admitted.

(iv) The Extent to which the Petitioner's Interest Will Be Represented by Existing Parties

(v) The Extent to Which the Petitioner's Participation Will Broaden the Issues or Delay the Proceedings

These two factors will be unchanged whether or not Proposed Issue No. 1 is admitted, since it is not essentially different from admitted Contention No. 2.

(vi) Weighing of the Five Factors and Conclusion

As to factor (i), Illinois has not shown good cause for the delay in filing Proposed Issue No. 1. Since Proposed Issue No. 1 is covered by previously allowed Contention No. 2, the additional four factors do not provide any positive effect to offset the negative effect of factor (i).

Proposed Issue No. 1 is not allowed.

The foregoing ruling on Illinois' proposed Issue No. 1 does not prevent Illinois from actively participating in the prosecution of PA's allowed Contention No. 2. Indeed, since PA's counsel has withdrawn because PA does not have the means to pay for further legal services, PA and Illinois should consider consolidation of their participation in hearings as to some or all allowed contentions, with counsel for Illinois being lead spokesman for both.

The second proposed issue reads as follows:

> *Illinois' Proposed Issue No. 2*
>
> 2. The Applicants and the NRC Staff in its SER have failed to provide a comprehensive evaluation of CPS-1 for adverse systems interaction, as required by 10 CFR Part 50, Appendix A, Criteria 19, 20, 22 and 29. Neither the Applicants nor the NRC Staff has adequately addressed the interaction of nonsafety grade components, equipment, systems, structures, and human and functional factors with safety systems and the effect this interaction will have during operations, transients, and accidents. This inadequacy is exacerbated by the Applicants' failure to adhere to a safety Quality Assurance/Quality Control program during construction of CPS-1.

This proposed issue No. 2 tracks PA's Proposed Supplemental Contention No. 5, which reads:

> 5. The Applicant and the NRC Staff inadequately consider the interaction of systems installed by engineers with differing functional specialties, such as civil, electrical, mechanical, and nuclear. The SER reveals that the Applicant has not yet described a comprehensive program that separately evaluates all structures, systems and components important to safety for the three categories of adverse systems interaction (spatially coupled, functionally coupled, and humanly coupled). These programs are especially significant in the light of Applicant's quality assurance and quality control problems during construction of the Clinton Plant.

A comparison of the two proposals shows, without extended discussion, that the two are so similar that for all practical purposes they are identical. The discussion and ruling herein above concerning PA's Proposed Supplemental Contention No. 5 apply equally to this Proposed Issue No. 2. Admission of Proposed Issue No. 2 is denied.

DISMISSAL OF PREVIOUSLY ACCEPTED CONTENTION NO. 3

Previously accepted Contention No. 3 reads as follows:

> 3. In noncompliance with 10 CFR §50.33(f) and Part 50, Appendix C, IP has not demonstrated that it possesses or has reasonable assurance of obtaining the funds necessary to pay the estimated costs of operation, plus the estimated cost of permanently shutting the facility down and maintaining it in a safe condition.

By amendment to 10 CFR §2.104(c)(4) published in 47 *Fed. Reg.* 13753 (March 31, 1982) the financial qualification of an Applicant for an operating license was removed from the scope of contentions which may be heard by an Atomic Safety and Licensing Board. Accordingly, previously allowed Contention No. 3 is deleted from the list of allowed contentions.

RULING ON IP's MOTION FOR SUMMARY JUDGMENT ON PA's CONTENTION NO. 5

As filed by PA on March 30, 1981, Contention No. 5 reads as follows:

> 5. The CPS is especially vulnerable to anticipated transients without scram (ATWS) due to the faulty welds during construction which have caused "burn through/suck back" on a number of control rod drive tubes. These defects have not been adequately analyzed or repaired. The CPS should not be licensed to operate until IP has completed an ATWS analysis for (1) redundancy, (2) systems interaction, (3) loss of coolant accident, and (4) incidents such as those experienced in other GE boiling water reactors.

In its Memorandum and Order of May 29, 1981 (LBP-81-15, 13 NRC 708 at 713-14), this contention was accepted by the Board based on the conclusion that the specificity requirement of 10 CFR §2.714(b) was met by the allegation that due to faulty welds on a number of control rod drive tubes the Clinton Power Station was especially vulnerable to anticipated transients without scram (ATWS).

On November 6, 1981, the parties filed a stipulation which deleted the first two sentences of Contention No. 5. The stipulation was approved by the Board in its Memorandum and Order of December 16, 1981 (LBP-81-61, 14 NRC 1735). The amended Contention No. 5 reads thus:

> 5. The CPS should not be licensed to operate until IP has completed an ATWS analysis for (1) redundancy, (2) systems interaction, (3) loss of coolant accident, and (4) incidents such as those experienced in other GE boiling water reactors.

On November 25, 1981, IP filed a Motion for Summary Disposition of Contention No. 5 urging that, as amended, the contention presents only the generic safety issues of ATWS. The Motion calls attention to the fact that Revised Contention

No. 19 filed by PA on March 20, 1981, listed a number of generic issues. This Contention No. 19 was rejected by the Board. See LBP-81-15, 13 NRC 708 at 716. IP argues that by rejecting PA's Contention No. 19, the Board eliminated all generic aspects of ATWS from this proceeding. In its pleading of December 7, 1981, the Staff supported the argument of IP. However, the Staff moved that consideration of IP's Motion for Summary Disposition be postponed until the report in the Safety Evaluation Report (SER) of results of the Staff's review of ATWS. The Staff's motion for postponement was granted by the Board in a telephone conference on March 9, 1982 and the Board also granted time until March 23, 1982 for filing supplemental briefs.

In answer to IP's arguments, Illinois points to *Cleveland Electric Illuminating Company et al.* (Perry Nuclear Power Plant, Units 1 & 2), LBP-82-1A, 15 NRC 43 (1982). In the *Perry* case, the contention was stated thus:

> "Applicant should install an automated standby liquid control system to mitigate the consequences of an anticipated transient without scram."

15 NRC 44.

The *Perry* Board denied the Motion to Dismiss this contention. The *Perry* Board commented on the specificity of the contention before it, thusly:

> Second, whether or not Perry should have an automated standby liquid control system is far more specific to Perry than nuclear waste disposal ever was to any particular plant. Perry is one of the first General Electric BWR/6 reactors with a Mark III containment to apply for a license and an appropriate decision about an SLCS for Perry requires detailed knowledge of its characteristics. Hence, specific knowledge of this particular plant is required both for an adjudicatory determination and for issuance of a reasoned rule affecting Perry. In this sense, this issue is by nature specific.

Id. at 45-46.

The language of Contention No. 5 reads as though it was an admonition to the Commission, or the Staff, not to grant an operating license for the Clinton Plant until IP and the Staff have performed their duties with respect to ATWS. No party has challenged the requirement that IP and the Staff perform their duties in this respect. Moreover, no party alleges that ATWS studies by IP or by the Staff have been completed.

In our discussion of PA's Proposed Supplemental Contention No. 5, *supra*, attention was called to the Appeal Board's ruling in the *River Bend* case concerning the validity of a contention based on a generic issue and the two tests laid down by the Appeal Board for admissibility of such contentions (ALAB-444, 6 NRC 773). Even if we accept the assertion that previously allowed Contention No. 5 contains a real issue, such issue fails to meet the second test required by the Appeal Board quoted above in that it does not mention a "particular item." Moreover, allowed Contention 5, as it now stands, lacks the specificity required by 10 CFR §2.714(b). The Motion for Summary Disposition of previously accepted Contention No. 5, as amended, is granted. This contention is no longer accepted. It is deleted from the list of accepted contention.

RENUMBERING OF ACCEPTED CONTENTIONS

Appendix A to the Memorandum and Order dated May 29, 1981 (LBP-81-15, 13 NRC 718-723) set forth twelve renumbered and revised allowed contentions remaining in this proceeding. Since that time the following changes in allowed contentions have occurred:

a. Previously allowed Contentions Nos. 5 and 11 were modified by Joint Stipulation of the Parties, dated November 6, 1981.
b. Previously allowed Contentions Nos. 7 and 8 were withdrawn by said Stipulation.
c. Previously allowed Contentions Nos. 4, 9 and 12 were withdrawn by PA after discussion between the Parties (see Staff letter of September 24, 1982).
d. Previously allowed Contentions Nos. 3 and 5 have been deleted by the Board for reasons stated in this Memorandum and Order.
e. PA's Proposed Supplemental Contention No. 4 has been admitted and Proposed Supplemental Contentions 1 through 3 and 5 through 8 have been denied admission for reasons stated in this Memorandum and Order.
f. Illinois' Proposed Issues No. 1 and 2 have been refused admission for reasons stated in this Memorandum and Order.

To facilitate future reference to the currently allowed contentions, they are renumbered and set forth in Appendix A to this Memorandum and Order.

ORDER

For the foregoing reasons and based upon a consideration of the entire record in this matter, it is this 10th day of November, 1982,

ORDERED

1. That Proposed Supplemental Contentions of PA Nos. 1, 2, 3, 5, 6, 7, 8 are denied admission.
2. That Proposed Supplemental Contention of PA No. 4 is admitted.
3. That Issues Nos. 1 and 2 proposed by Illinois are denied admission.
4. That the previously allowed Contention No. 3 is deleted.
5. That the motion by IP for summary judgment of previously admitted Contention No. 5 is granted.

6. That all contentions which are, as of this date, accepted for litigation in this proceeding are set forth and *renumbered* in Appendix A to this Memorandum and Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Hugh K. Clark, Chairman
ADMINISTRATIVE JUDGE

Dr. George A. Ferguson
ADMINISTRATIVE JUDGE

Dr. Oscar H. Paris
ADMINISTRATIVE JUDGE

Bethesda, Maryland

APPENDIX A

The following contentions are currently admitted in this proceeding:

CONTENTION I

(PA's previous Contention No. 1) Clinton Power Station (CPS) should not be licensed to operate until a safe and feasible emergency plan has been developed which complies fully with current NRC requirements. See 10 CFR Part 50, Appendix E, NUREGs-0696 and -0654. The emergency plan currently proposed by Illinois Power Company (IP) as delineated in the Final Safety Analysis Report (FSAR), is insufficient in the following respects:

(a) IP has failed to adequately incorporate emergency planning for a plume exposure pathway emergency planning zone (plume EPZ) of a minimum ten-mile radius from the CPS and an ingestion exposure pathway emergency planning zone (ingestion EPZ) of a minimum fifty-mile radius from the CPS, as required by 10 CFR Part 50, Appendix E. This planning should include, at a minimum, consideration of the following items peculiar to the CPS site vicinity and region:

(1) Problems posed in effecting termination of activities at outdoor recreational facilities within the plume EPZ and ingestion EPZ;

(2) Difficulties posed by "special facilities" which, because of the nature of the populace, the number of people involved or the means of available communication and transportation, give rise to especially acute problems in emergency response actions. Included in this category are universities and other schools, nursing homes, mental health facilities, prisons and jails, children's camps, state parks, industrial parks, and other such facilities located within the plume EPZ and ingestion EPZ;

(3) The severe, but not uncommon, weather conditions, such as heavy snowfalls, sleet storms, and tornadoes which occur in the site vicinity and plume and ingestion EPZs throughout the year.

(b) IPC has not demonstrated concrete coordination plans with the appropriate state and local agencies involved in emergency planning and response actions. Thus far IP has failed to effect meaningful agreements with "17 named agencies as well as others such as local hospitals and physicians" as required by the NRC Staff in the Construction Permit Safety Evaluation Report, Section 13.4. See FSAR Emergency Plan, Sections 5.5.3, 5.5.4, B6, B7, and B9.

(c) The emergency plan lacks sufficient detail in the area of emergency preparedness training. For example, the plan does not state who will provide the training of local services personnel or how often that training will be provided. The same is true of training plans for accident assessment personnel and the "Emergency Response Organization." Additionally, there is no provision for emergency training of security personnel or a radiological orientation training program for local services personnel, including local news media persons, as required by 10 CFR Part 50, Appendix E.

(d) As required by 10 CFR Part 50, Appendix E, the emergency plan fails to identify or describe the following items:

(1) The special qualifications of non-IP employees who will be utilized in emergency training operations or recovery;

(2) The criteria for determining the need for notification and participation of local, state and federal agencies;

(3) An analysis of the time required to evacuate or provide other protective measures for various sectors and distances within the plume exposure and ingestion EPZs for both transient and permanent publics;

(4) A sufficient identification of the persons who will be responsible for making off-site dose projections;
(5) An adequate description of how off-site dose projections will be made and how the results will be transmitted to appropriate government entities;
(6) Plans for yearly dissemination to the public within the plume exposure and ingestion EPZs of basic emergency planning information, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency;
(7) An identification of the appropriate state and local government officials within the EPZ which will require notification under accident conditions.
(8) A demonstration that state and local officials have the capability to make a public notification decision promptly upon being informed of an emergency condition.

(e) The requisite protective actions necessary to assure isolation of people from the plume and ingestion EPZs in case of an off-site or general emergency or other serious accident is not described with sufficient detail in the Emergency Plan. See FSAR Emergency Plan, Section 5.4.3.1.
(f) IP has failed to provide adequate emergency support facilities for the CPS. The FSAR lacks documentation concerning compliance with the current regulatory requirements for the Technical Support Center, the Operational Support Center, the Emergency Operations Facility, the Safety Parameter Display System, and the Nuclear Data Link. See NUREG-0696.

CONTENTION II

(PA's previous Contention No. 2) The CPS should not be licensed to operate until IP has demonstrated, as required by 10 CFR §50.34(b) and Part 50, Appendix B, that it possesses sufficient management and technical qualifications to assure that the CPS will be (a) maintained in a safe condition while operating normally, or (b) safely operated and controlled in the event of an abnormal occurrence or emergency, or (c) permanently shut down and maintained in a safe condition.

Repeated Quality Assurance (QA) and Quality Control (QC) problems are noted in NRC Region III Inspection Reports. Specifically, IP's QA and QC program is consistently deficient in its ability to assure (1) a sufficient number of experienced personnel, (2) integrity of welding procedures, and (3) numerous other QA and QC functions. These incidents, among others, raise serious questions as to IP's management and technical capabilities to operate, backfit, and permanently shut down the CPS in compliance with regulatory requirements.

CONTENTION III

(PA's previous Contention No. 6) The design and fabrication of the CPS control room layout and instrumentation have not been modified to meet current regulatory requirements in NUREGs-0660, -0694, -0737. Specifically:

(a) The CPS lacks sufficient instrumentation for displaying and recording the reactor pressure vessel water level.

(b) The CPS lacks sufficient instrumentation for detecting inadequate core cooling in case of an abnormal occurrence.

(c) Direct indication of safety relief valve position should be, but is not, provided for in the CPS instrumentation.

(d) A Safety Parameter Display System should be, but is not, provided for in the main control room.

(e) The CPS lacks adequate instrumentation for monitoring accident conditions.

(f) IP has not demonstrated its ability to comply with current NRC requirements for overall control room design standards.

(g) The CPS control room design and instrumentation has not been subjected to a comparative evaluation of the interaction of human factors and efficiency of operation.

(h) Not all CPS control panels are completely unobstructed and accessible. It is insufficient to have certain surveillance and monitoring actions on back row panels. Moreover, there has been no documentation of the criteria used to determine which instruments should be placed on back row panels.

(i) The FSAR contains no evaluation of the CPS control room layout and instrumentation in terms of the new criteria resulting from the accident at TMI Unit 2.

(j) The FSAR contains no documentation of how the power station can or will be modified to meet the new criteria imposed following the TMI accident.

CONTENTION IV

(PA's previous Contention No. 10) The CPS Emergency Core Cooling System (ECCS) has not been demonstrated to meet the requirements of 10 CFR Part 50.46 and 10 CFR Part 50, Appendix K. Specifically,

(a) In noncompliance with 10 CFR Part 50.46, the core spray distribution of CPS's ECCS is of unproven operating capability;
(b) In noncompliance with 10 CFR Part 50, Appendix K, the models used to predict ECCS performance of the CPS have not been proven accurate.

CONTENTION V

(PA's previous Contention No. 11) The effects of the low-level radiation to be released from Clinton Unit 1 have not been adequately assessed and considered in the following respects:

(a) the methods used to calculate atmospheric effluents of routine releases are inadequate in that conservative estimates were not, but should have been, used by IP;
(b) the residual risks of low-level radiation which will result from the release of radionuclides from Clinton Unit 1 have not been, but should be, adequately assessed and factored into the NEPA cost-benefit analysis for Clinton Unit 1.

CONTENTION VI

(PA's Supplemental Contention No. 4) General Electric recently announced that it will withdraw from the nuclear hardware market. The effects of this withdrawal have not been considered by the Applicants or the Staff. This withdrawal is especially germane in light of Applicants' lack of experience in operating nuclear plants and their future needs relative to plant servicing and design modifications mandated by present and future Commission regulations and orders.

Cite as 16 NRC 1626 (1982) **LBP-82-104**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2) **November 15, 1982**

The Licensing Board excludes intervenors' late-filed contention, based on a *Science News* article, concerning adverse effects on reactor operator performance caused by shift rotation schedules that failed to account for "circadian rhythms." The Board excludes the contention primarily because there was substantial pre-existing knowledge that improper shift rotations might cause fatigue and adversely affect operator performance and intervenor failed to show the significance of the allegedly new information about "circadian rhythms."

RULES OF PRACTICE: LATE FILING OF CONTENTION; GOOD CAUSE

The appearance of an article in a popular science publication could provide good cause for late filing, but the intervenor must demonstrate the extent to which new information in the article differs from previously available information. In addition, intervenor's discussion of the article must demonstrate its ability to contribute to the development of a sound record in the proceeding.

TECHNICAL ISSUES DISCUSSED

Shift Rotation: Effect on Personnel Performance
Human Factors (Shift Rotation)
Circadian Rhythm (Effect on Efficiency of Operator Performance)

MEMORANDUM AND ORDER
(Concerning Motion to Submit a Late-Filed Shift Rotation Contention)

On September 10, 1982, Sunflower Alliance Inc., *et al.*, (Sunflower) moved to late-file a contention that would seek to require Cleveland Electric Illuminating Company (applicant) to design its shift schedules for the Perry Plant in conformity with "circadian principles," requiring forward shift rotation and comparatively less frequent shift changes. The basis for the contention was furnished by a *Science News* article (July 31, 1982 at 69) that contains, among other things, a statement by Charles Ehret, a biologist at Argonne National Laboratory in Illinois, that:

> at least half the power plants are rotating their workers the wrong way, causing sleep deprivation and dangerous desynchronization.

In response, applicant and staff have attempted to show that this is not a new issue by citing several articles appearing prior to the *Science News* article. They also argue that Sunflower has not shown any special expertise on this issue, especially as it did not even analyze the *Science* article that was discussed in the *Science News* article they cite. They therefore claim that there is insufficient cause for late filing.

(Staff also argues that this is an improper challenge to NRC regulations. Applicant argues that intervenors have not shown a nexus to the Perry facility. Happily, we need not address these arguments, as we are deciding this issue on other grounds.)

We have decided that, on balance, the criteria for late filing in 10 CFR §2.714(a)(1) are not met. The *Science News* article does not constitute sufficient cause for late filing a contention about such a basic proposition as the likelihood that shift rotations may cause people to be tired and to make mistakes. As applicant has pointed out, industrial psychologists have been aware of that general proposition, which is common knowledge, for decades. The only new information in *Science News* is the theory that "circadian rhythms" may help to account for fatigue factors. But Sunflower has not even reviewed the literature to show that this one new twist represents a significant departure from previously available information. It has not discussed the underlying data to show the strength of the supposed relationship nor the basis for believing that it is linked to nuclear plant safety.

Indeed, it has done nothing more than photocopy a single article and to discuss its content.

Considering criteria (i) and (iii) (good cause and ability to assist in the development of a sound record) together (as they seem to us to be related in this instance) we find that these two criteria weigh heavily against the admission of this contention. The delay criterion, considering the stage of the case at which the contention was filed, also weighs somewhat against. Although the other criteria are somewhat favorable to admissibility, the overall balance is adverse to Sunflower, and the contention shall not be admitted.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 15th day of November, 1982,

ORDERED

Sunflower Alliance Inc., *et al.*'s Motion to Submit an Additional Contention, filed on September 10, 1982, is denied.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 1629 (1982) LBP-82-105

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James P. Gleason, Chairman
Dr. Oscar H. Paris
Frederick J. Shon

In the Matter of **Docket Nos. 50-247-SP**
50-286-SP

CONSOLIDATED EDISON COMPANY
OF NEW YORK
(Indian Point, Unit No. 2)

POWER AUTHORITY OF THE STATE
OF NEW YORK
(Indian Point, Unit No. 3) **November 15, 1982**

The Licensing Board sets forth its final decision on the contentions to be litigated in this proceeding (except for emergency planning issues), a schedule, and procedural matters related thereto.

REGULATORY GUIDES: APPLICATION

Licensees are required to show they have taken steps to provide equivalent or better measures than called for in regulatory guides if they do not, in fact, comply with the specific requirements set forth in the guides.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTION

A Commission decision that residual radiation health effects may be litigated in an individual licensing proceeding, even for plants which comply with 10 CFR Part 50, Appendix I, is applicable to this special proceeding. Therefore, the Licensing Board may admit a contention concerning the environmental costs associated with the routine release of radiation from the power plants.

MEMORANDUM AND ORDER

(Formulating Final Contentions and Setting Schedule)

During the prehearing conference on November 3-4, 1982, the Board reviewed the parties' comments and responses received pursuant to the Board's Order of October 1, 1982. Herein, we set forth our final decision on the contentions (except for emergency planning issues), a schedule, and procedural matters related thereto.

CONTENTIONS UNDER COMMISSION QUESTION 1

Written responses to the reformulation of Contention 1.1 as presented in the Board's October 1, 1982, Order were received from Con Edison, the Power Authority, and the NRC Staff (Con Edison's Memorandum Respecting the Licensing Board's October 1, 1982, Order Reformulating Contentions, dated October 19, 1982 (Con Edison's Response); Power Authority's Response to Board's October 1, 1982 Order Reformulating Contentions, dated October 19, 1982 (Power Authority's Response); and NRC Staff Response to Board Order of October 1, 1982, dated October 15, 1982 (Staff Response)). Both Licensees objected to the term "unacceptably high risks" in Contention 1.1 and the terms "reasonably probable accidents" and "unacceptable risks" that appear in the statement of bases for the contention. They argue that the Commission is asking the Board to determine the quantitative risks associated with the operation of the Indian Point plants and is not asking the Board to make a judgment as to the acceptability of those risks. Moreover, they point out that these terms were not used by the Board in its original formulation of contentions under Commission Question 1 in the April 23, 1982, Order (LBP-82-34, 15 NRC 895). Staff took no position with respect to this argument. The Intervenors who responded during the prehearing conference on November 3, 1982, supported the Board's October 1 reformulation.

We believe the Licensee's point with respect to the words "unacceptably," "unacceptable," and "reasonably probable" are well taken. Therefore, we have decided to delete these terms from Contention 1.1 and its statement of bases.

Licensees also objected to the inclusion of basis (1)(b), on the grounds that UCS/NYPIRG did not mention this basis in its January 29, 1982, "UCS/NYPIRG Response to Objections to UCS/NYPIRG Contentions Filed by NRC Staff, Power Authority of the State of New York and Con Edison." While it is true UCS/NYPIRG did not mention this basis in the referenced pleading, the Intervenor did not state it was abandoning the basis; therefore, we are not convinced that the basis has been withdrawn. Con Edison also argues that it is not legally required to comply with Reg. Guide 1.97, as the basis seems to suggest. That is certainly true, but Licensees are required to show they have taken steps to provide equivalent or better measures than called for in regulatory guides if they do not, in fact, comply with the specific requirements set forth in the guides. In our view, the requirements of Reg. Guide 1.97, Rev. 2, are sufficiently important, especially in light of factors that contributed to the severity of the accident at Three Mile Island, to warrant consideration in this proceeding of Licensees' compliance with Reg. Guide 1.97.

Both Licensees argue that the bases accepted in the October order are not sufficiently specific because they do not state the ways in which the Licensees fail to comply with 10 CFR §50.47(b)(4) and Reg. Guide 1.97, Rev. 2. The NRC Staff apparently found no fault with the degree of specificity provided in the bases for Contention 1.1, nor did the Intervenors who addressed the matter during the prehearing conference. We are convinced the bases proferred for Contention 1.1 are stated with reasonable specificity.[1] Therefore, we reject Licensees' plea that the contentions be omitted for lack of specific bases.

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[1] The bases for the reformulated contention are:

1) The risk of injurious health effects to people in the plume exposure EPZ from excessive exposure to radiation, as a result of accidents, will be exacerbated by an impeded evacuation because:
    a) Licensees have failed to demonstrate that proper emergency action levels (EALs) as required by 10 CFR §50.47(b)(4) have been established which will allow prompt recognition of the range of possible accidents at Indian Point Units 2 and 3 and prompt and correct diagnoses of such accidents for the recommendation of appropriate protective actions (UCS/NYPIRG I85); and
    b) Licensees have failed to provide instrumentation in accordance with Reg. Guide 1.97, Rev. 2, thus compromising their ability to adequately monitor the course of accidents at Indian Point Units 2 and 3 (UCS/NYPIRG IB5);
2) A risk of health and property damage as a result of accidents extends beyond the plume exposure EPZ to the New York City metropolitan area because:
    a) under certain meteorological conditions, life-threatening doses would occur in the New York City metropolitan area for a WASH-1400, PWR-2 type accident (UCS/NYPIRG IIID), and there are no established radiological emergency plans for this area which would adequately protect the public health and safety in such circumstances (UCS/NYPIRG IIID, FOE/Audubon I, basis 7); and
    b) contamination of the Hudson River would affect beaches as far away as Coney Island and Rockaway Beach (See NUREG-0850, Vol. I, Preliminary Report, Appendix D) (UCS/NYPIRG IVA).

The final formulation for Contention 1.1 is set forth in the Appendix to this Order.

Because the limited scope of Contention 1.1 will not provide sufficient information to enable the Board to answer Commission Question 1, four Board Questions were set forth in our October 1 Order. The Power Authority stated that it believes the Board Questions to be "appropriate for the evidentiary hearing." Con Edison did not address them. The NRC Staff, on the other hand, objected to the breadth of Board Question 1.1, which asked the parties to present evidence on the *Indian Point Probabilistic Safety Study* (IPPSS) and "any reviews or studies of the IPPSS prepared by or for the Licensees, the NRC Staff, or the Intervenors, or any other document which addresses the accuracy of the IPPSS." In Staff's view, the Board should specify which documents it wants the parties to address. Staff argued that if there were other documents known to the Board or the parties which it would be required to address, it should be made aware of those documents at an early date so that they could be reviewed and addressed in prefiled testimony.

We are sympathetic with Staff's plea and are willing to further identify relevant documents to the extent that we are able to do so at this time. Board Question 1.1 shall be modified accordingly. But we are unwilling to make the list final with only those documents known to the Board at this time. As we pointed out at the Prehearing Conference on November 3, 1982, the Board lacks the mechanism to find documents on its own. Therefore, we shall leave the open-ended part of Board Question 1.1 unchanged. In light of Staff's well-founded plea, however, we are ordering each party that is now aware of any *document* on the IPPSS to immediately identify that document for the other parties; further, should any party become aware of such a document in the future, that party shall promptly notify the other parties and identify the document.

The final formulation of Board Question 1.1 and the remaining Board Questions under Commission Question 1, which are unchanged, are set forth in the Appendix.

CONTENTIONS UNDER COMMISSION QUESTION 2

We have reexamined the contentions proposed under Commission Question 2 in our Board Order of October 1. These were:

2.1(a) A filtered vented containment system for each unit must be installed.

2.1(b) License conditions must be imposed to prohibit power operations with less than a fully operable complement of safety-grade and/or safety-related equipment.

2.1(c) A "core catcher" must be installed at each unit to provide additional protective action time in the event of a "melt-through" accident in which the reactor pressure vessel is breached by molten fuel.

2.1(d) A separate containment structure must be provided into which excess pressure from accidents and transients can be relieved without necessitating releases to the environment, thereby reducing the risk of containment failure by overpressurization.

2.2(a) The cooling systems at the plants should be changed so that they no longer use brackish Hudson River water. This change is needed to combat safety-related corrosion problems.

2.2(b) The residual risk posed by the Indian Point plants and discussed under Board Question 1.4 above is great enough to justify remedial measures to prevent pressure vessel damage by pressurized thermal shock. The specific measures needed include one or more of the following:

(i) pressure vessel replacement;
(ii) *in situ* annealing of the pressure vessel;
(iii) revision of technical specifications to reduce the probability of pressurized thermal shock;
(iv) use of preheated water for safety injection.

Staff raised no objections to these contentions (Staff response at 4). Licensees objected to the admission of all parts of both contentions (PASNY Response at 11-25; Con Ed Response at 20-43). Intervenors UCS/NYPIRG offered additional bases at the prehearing conference for proposed Contentions 2.1(a), 2.1(c), and 2.1(d).[2] WBCA objected to our having eliminated Contention 2.2(d) (West Branch Conservation Association's Reply to Memorandum and Order of October 1, 1982 (WBCA Reply)). We granted Licensees opportunity to reply to the additional bases raised and they did so (Licensees' Response to UCS Oral Motion to Amend Contentions, dated November 9, 1982 (Licensees' Response to Motion)). We treat the several parts of these contentions below.

Contentions 2.1(a) and 2.1(d)

As we noted in our October 1 Order (Order at 19), these two subparts are closely allied. The Licensees would have us apply a more stringent standard in using the Commission's "two-prong" test than that which we adopted in our October 1 Order. The NRC Staff, on the other hand, believes that we have adequately addressed the two-pronged test and stated that it did not find the Licensees' arguments persuasive.

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[2] For 2.1(a) and 2.1(d) they offer: NUREG/CR-1409, Summary of Zion/Indian Point Study; NUREG/CR-1410, Report of the Zion/Indian Point Study, Vol. I; NUREG/CR-1411, Report of the Zion/Indian Point Study, Vol. II.

For 2.1(c) they offer: NUREG/CR-2155, A Review of the Applicability of Core Retention Concepts to Light Water Reactor Containments.

As a general review of reactor containment, they offer: Beyea, J., and Von Hippel, F., Containment of a Reactor Meltdown, *Bulletin of the Atomic Scientists*, Aug/Sept 1982, at 52.

In our view, use of a standard as stringent as that advocated by the Licensees would be tantamount to requiring that the Intervenors prove their pleadings in advance of the hearing. We do not believe that the Commission intended that prior to admitting a contention advocating a safety measure, we should find that a significant risk surely exists without such safety measure. We believe such a finding should reflect the outcome of this litigation rather than its starting point, and accordingly, we conclude that the threshold showing we have required is sufficient.

As to the additional bases alleged by Intervenors, we have reviewed them, paying particular attention to the results (which are specific to Indian Point) presented at pp. 1.70-1.72 of NUREG/CR-1410. It is true that these results give only conditional probabilities (*i.e.*, probabilities showing what is expected given an accident to begin with), as Licensees point out (Licensees' Response to Motion at 7). But we nevertheless regard the material as a strong buttress to our original finding of potential improvement. Indeed, NUREG/CR-1410 at page 1.70 suggests that potential early fatalities would drop to zero with any of the four filtered venting options examined. We also remain convinced that the separate containment structure of 2.1(d) is sufficiently similar in function and engineering considerations to a filtered venting system to justify its consideration as well.

Licensees object to our consideration of these additional materials on grounds of timeliness. We note, however, that our Order of October 1, taking account of the special nature of this proceeding, specifically set the prehearing conference as the appropriate time for argument on responses to the Order (Order at 42). Since Licensees' responses had challenged the bases for these contentions, we regard the Intervenors argument as timely. We feel the opportunity we have afforded the Licensees to address the merits of these additional bases has been quite adequate.

Nothing in Licensees' Response to Motion convinces us to change our rulings.

Contention 2.1(b)

Upon consideration of Licensees' arguments against admission of this subpart, we have become convinced that this subpart does indeed lack specificity and basis. We note that the subpart mentions only "a fully operable complement" of safety-grade equipment. Clearly, a more sophisticated examination of what is needed for safe operation would require a detailed review of every piece of such equipment and an assessment of the risks entailed should that equipment be inoperable for some period of time. But such an assessment is ostensibly just what was needed to reduce the "Limiting Conditions for Operation" included in the plants' Technical Specifications (Con Edison Response at 26-27; PASNY Response at 14-15). Thus, the existence of these Technical Specifications suggests that a careful examination by experts has already established which of the safety features comprising a "full complement" must always operate and which need not. We find this notion persuasive, even though we are not convinced by Licensees' arguments for a higher threshold of risk as a condition for admission. Accordingly, Contention 2.1(b) shall be eliminated from the proceeding.

Contention 2.1(c)

We have reconsidered this subpart and have become convinced that we should drop it. We were impressed by the arguments of Licensees to the effect that no clear nexus exists between the "core-catcher" concept and the delay of release to permit population response. (Con Ed Response at 33; PASNY Response at 19-20). Our rejection of the subpart is thus, in part, grounded on the notion that the basis set forth for it in our October 1 Order is logically flawed:

> In the event of a "melt-through" accident the dense population in the EPZ may cause a delay in evacuation and, thus, a resulting increase in public exposure to radiation. [Thus] . . . we make a threshold finding that a "core-catcher" would delay a containment breach and thus could significantly reduce such risk.

(Order at 19.) The core-catcher does not intervene in accident scenarios requiring rapid evacuation.

We have also considered NUREG/CR-2155. Curiously, although this document was cited by UCS/NYPIRG as support for the addition of core-catchers to Indian Point, its Executive Summary says, in part:

> The potential risk-reduction benefit of a retainer at five specific reactors — Surry, Peach Bottom, Sequoyah, Oconee, and Grand Gulf — is examined by assuming that the device does stop melt-through and does significantly reduce gas generation. Based upon documented risk analyses for these plants, it is concluded that an effective core retainer would *not* significantly reduce risk at any of the five sites.

(NUREG/CR-2155 at 6, *emphasis added*.) This conclusion is based on findings which suggest that a core-catcher simply does not affect the scenarios important to short-term public exposure to radiation, since the large contributors to such risk are scenarios involving above-grade rupture of containment. (*Id.* at 6, 7). The report convinces us that, as nearly as we can find at present, the addition of a core-catcher would likely be, at most, a *de minimis* improvement in safety compared to that afforded by a system intended to aid the above-grade containment function such as the systems called for by 2.1(a) and 2.1(d).

Contention 2.2(a)

Licensees would have us reject this subpart primarily for lack of specificity (Con Ed Response at 34-35; PASNY Response at 21-22). In particular, neither Licensee professes to see the change suggested as being a specific change. We disagree; in context, the change suggested is clearly a change to a less corrosive cooling medium than brackish water, *viz*, fresh or treated water.

Licensees also fault us for accepting as a basis for this contention an event (flooding of containment) which we rejected as a basis for a contention which called for an overall review of all quality assurance procedures and all aspects of construction and operation. (Con Ed Response at 35-36; PASNY Response at 22). We see nothing illogical in what we have done. The event may well be a reason for examining the corrosive properties of the coolant even though its wider implications for Q/A and construction review should be left for Staff attention. We see no reason, therefore, to reject 2.2(a).

Contention 2.2(b)

As with the other contention subparts under Commission Question 2, Licensees would have us apply a much more stringent standard for acceptance than that which we have chosen. Further, because the Sandia Letter Report cited by the Board as part of the basis for this subpart did not make a positive finding of significant residual risk from pressurized thermal shock, Licensees would consider this subpart inadmissible (Con Ed Response at 39; PASNY Response at 24). Our view simply differs: we believe that any unevaluated risk of catastrophic failure of the primary coolant system deserves some examination to determine whether there exists a hazard and whether the hazard can be reduced by the proposed measures.

Licensees' other prime objection to this subpart's admission is that we, as a Board, recognized that the Staff is attacking the problem generically. As we pointed out in our order, the generic attack has not yet, and likely will not soon, produce any probabilistic evaluation of the pressurized thermal shock hazard at Indian Point nor any evaluation of the advantage in safety which might accrue should the specific measures of 2.2(b) be implemented. It is information bearing on these points which we view as material to aid in answering Commission Question 2. Contention 2.2(b) will, therefore, be retained.

Rejected Contention 2.2(d)

At the prehearing conference and in its reply to our October Order, WBCA objected to our having dropped Contention 2.2(d) (WBCA Reply at 1). The thrust of WBCA's argument (WBCA Reply at 2) is that the history of Indian Point in general and the fan-cooler leakage event in particular, show a tendency to discover troubles only after they occur. It is, therefore, necessary, in WBCA's view, to institute a general reexamination of all quality assurance measures, all pieces of equipment, and all operating practices. We remain convinced that no single instance (or group of instances) of equipment malfunction could justify a Board's requiring the sort of exhaustive review which WBCA's position demands. Nor do we see in this broad allegation the specificity of risk or of cure which Commission Question 2 would require. We have already offered WBCA ample opportunity to disclose under Contention 5.1 specific instances of improper construction and operation which might yield high risks (Order at 3). WBCA has declined that opportunity (WBCA Reply at 3), citing time constraints. We believe subpart 2.2(d) should not be reinstated as a matter in litigation here.

Board Question 2.2.1

PASNY finds Board Question 2.2.1 "objectionable" because of inadequate basis and failure to meet the threshold tests. (PASNY Reply at 26) Specifically, PASNY believes that the proposed requirements, not having been adopted generically, have no claim on our attention in this specific case. We disagree. The reasoning at pages 22 and 23 of our October 1 Order, in our view, remains valid: If failure of a steam generator tube is an "Abnormal Occurrence," entailing all that term of art implies, if Indian Point is experiencing a novel threat to tube integrity, and if a body of experts in the field has suggested countermeasures, then the applicability of those countermeasures is a proper subject for our inquiry. Hence, Board Question 2.2.1 will remain in this proceeding.

CONTENTIONS UNDER COMMISSION QUESTIONS 3 AND 4

In its October 1 Order, the Board deferred reformulation of contentions dealing with the Commission's questions on emergency planning until the 120-day clock expires on December 3, 1982. It was our judgment that reevaluating contentions that could be impacted by corrected deficiencies in emergency planning was a wasteful expenditure of the Board's time and that of the parties.

In written responses, and during the prehearing conference, intervening parties and governmental representatives urged the immediate reformulation of the contentions alleging that few, if any, would be affected by FEMA's findings on deficiencies. They argued also that hearings could commence now with interested governmental representatives since their testimony was geared to the Commission's questions on emergency planning and not to specific contentions related to those issues. A particularly strong plea was submitted for the Board to hear testimony from Westchester County since the recent State elections would cause departure of most, if not all, of its witnesses from County service.

As a result of recent information notifying the Board and parties that FEMA proposes to perform its final evaluation of emergency planning at Indian Point after an exercise now scheduled for March 8, 1983, the Licensees and Staff recommend a delay in all testimony on the issues in this area until that evaluation is received. Using a conservative assumption that reformulation of contentions on questions 3 and 4 and the filing of supplemental testimony by the parties would encompass a six-week period beyond FEMA's scheduled assessment date (30 days after the exercise), it appears likely that in following this path, hearings could not be completed before mid-summer of next year. And even with a minimum period for proposed findings and preparing the Board's recommendations to the Commission, this schedule would extend this proceeding until the end of 1983. Since this course provides little assurance to the public that the Commission's safety issues concerning the Indian Point facilities are being resolved in a speedy and equitable manner, and taking into account the recommendation of the schedule committee appointed at the prehearing conference, we have adopted herein a schedule more in line with the exigencies we face.

FEMA has notified the Commission it will be prepared at the end of the 120-day period to provide its conclusions on the adequacy of the plan as a result of the corrective actions taken. During the prehearing conference, the Board was assured the Staff would be requesting FEMA's assessment, which has an estimated date of availability of December 17, 1982. Since FEMA has been heavily involved in the effort to correct the planning deficiencies at Indian Point, it should have no difficulty in providing its assessment by that time. Shortly thereafter, we will require those party intervenors who have contributed to contentions under these questions, as reflected in our Order of April 23, 1982, to transmit, in writing, assurances of continued support of their subsumed contentions and the bases thereof, or alternatively, their intentions to abandon them. The Board will then commence reformulation of the emergency planning contentions.

Because the Board believes the record of this proceeding could be inadequate absent the testimony of Westchester County officials whose past stewardship of County affairs may have provided unique experiences, the Board will request the filing of supplemental testimony and provide an earlier but limited period for hearing and cross-examination of those witnesses. Requests for an additional opportunity to testify from the new administration in the County will receive favorable consideration from the Board when the hearing on emergency planning questions commences at a later date. We see, however, no reason to provide an earlier opportunity to receive testimony from governmental representatives other than the departing Westchester County witnesses. Virtually all evidence on these questions and contentions thereunder, will, in our opinion, be impacted by FEMA's findings at the end of the 120-day period. Accordingly, they should be considered in a similar time frame, after they have had an opportunity to submit supplemental testimony in response to the FEMA findings.

Periodic exercises and drills are a continuing requirement in NRC/FEMA regulations and guidelines as a means of verifying the ability of response organizations to implement emergency plans. If the exercise programmed for March 8, 1983, reveals significant deficiencies in offsite emergency planning, we expect that FEMA and the Staff will promptly report such developments to the Board and the parties. If needed, a brief hearing session to receive testimony and cross-examination on these developments will be scheduled at that time. The Commission, of course, can always consider FEMA's final evaluation along with any other information it obtains on Indian Point in addition to the Board's recommendations on the merits in this proceeding. The foregoing decisions on emergency planning matters are reflected in the detailed schedule that follows.

CONTENTIONS UNDER COMMISSION QUESTION 5

In our Order of October 1, 1982, we decided that Contention 5.1 lacked the specificity required by the Commission's July 27, 1982, Order (CLI-82-15, 16 NRC 27) and that it would be rejected unless WBCA provided by October 15, 1982, a list of specific design features or specific plant conditions which make the Indian Point plants riskier than any other nuclear plants.[3]

WBCA stated in its written response (WBCA Reply) dated October 13, 1982, that it could not provide the specificity required for Contention 5.1 due to time constraints. WBCA did not request an extension of time in which to respond but did request a clarification of intervenor status and participation under Commission Question 5, as well as under Board Question 2.2.1.

WBCA did not provide the required specificity by October 15, 1982, nor during the prehearing conference. WBCA did mention "brackish water" at the prehearing conference, but that issue will be dealt with under Contention 2. Contention 5.1 therefore is deleted. WBCA, however, is not precluded from presenting testimony which directly addresses Commission Question 5.

We also decided to drop Board Question 5.1 on the grounds that parties might better address the issues it raised in their proposed findings, by analyzing the evidence adduced on the other Commission questions, instead of presenting evidence on this question alone. No party raised objections to the Board's decision to drop Board Question 5.1.

Therefore, for the foregoing reasons, we have determined that there shall be no contentions or Board Questions under Commission Question 5, but that the NRC Staff and the Licensees shall present testimony which directly addresses this Commission question. The other parties are invited to do likewise in accordance with the procedures set forth at page 22 of this Order governing Intervenor participation with respect to Board Questions and Commission Question 5.

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[3] Recognizing that more time might be needed to respond to certain parts of our order, we stated that we would entertain motions for an extension of time to submit a response.

We concur with Consolidated Edison's assessment, presented at the prehearing conference, that the Sandia Report, NUREG/CR-2239, "Technical Guidance for Siting Criteria Development," (Sandia Consequences Study) bears on Commission Question 5. Hence, we expect that the report will be addressed under this question.

CONTENTIONS UNDER COMMISSION QUESTION 6

In our Order of October 1, 1982, we decided to retain Contentions 6.1 and 6.3 without modification and to delete Contention 6.2. We rejected Contention 6.2 on two grounds:

1) that we were precluded by the Commission from considering the psychological impacts of Indian Point; and,
2) that the allegation that the physical environment around Indian Point would be improved by a shutdown of the power plants due to a resulting reduction in the release of radiation to the environment did not seem important to answering the Commission's question.

No party raised objections to our decisions regarding Contentions 6.1 and 6.3. Therefore, Contentions 6.1 and 6.3 are retained as stated in our October 1, 1982, Order, because the contentions and the bases meet the standard of specificity called for by the Commission's Order of July 27, 1982, and the contentions are material to answering Commission Question 6.

PARENTS raised objections to our decision to delete Contention 6.2 in its written response to the October 1, 1982, Order, entitled "PARENTS Concerned About Indian Point, Pre-Hearing Motion," and at the prehearing conference on November 3, 1982. PARENTS expressed their concern that "[i]f this contention is eliminated, PARENTS will be denied an opportunity to compare radiation releases at Indian Point with releases at other nuclear power plants, especially as a function of days in operation and population density. . . . It may well be that radiation releases at Indian Point pose a greater health risk because of the greater numbers of children living near these plants." At the prehearing conference, PARENTS argued that the routine release of radiation at Indian Point is a serious environmental cost because of the greater susceptibility of children and fetuses to radiation, and that the high population density surrounding the plants results in a very large number of children being exposed to routine releases. This site-specific radiological effect must be factored into the cost-benefit balance of shutting the plants down.

We find PARENTS' arguments for reinstating Contention 6.2 persuasive. Therefore, we are reformulating 6.2 to more accurately reflect PARENTS' concerns as articulated in its arguments. As a basis for the contention, we are taking notice of the report by the National Academy of Sciences' Committee on the Biological Effects of Ionizing Radiations, *The Effects on Populations of Exposures to Low Levels of Ionizing Radiation: 1980* (BEIR III Report), which discusses age-specific susceptibility to radiation-induced cancer. We also note that the Commission has sanctioned the litigation of residual radiation health effects in individual proceedings even for plants which comply with 10 CFR Part 50, Appendix I. (*Public Service Company of Oklahoma* (Black Fox Station, Units 1 and 2), 12 NRC 264, 1980).)

With respect to that part of the argument that relates to comparing the risks of exposing children at Indian Point with the risks at other nuclear power plants, however, we instruct PARENTS that such testimony, if submitted, should be submitted under Commission Question 5 rather than Contention 6.2. Testimony under Contention 6.2 should address the cost-benefit balance of shutting down Indian Point Units 2 and 3.

The Contentions, therefore, which may be litigated under Commission Question 6 are Contentions 6.1, reformulated 6.2, and 6.3. They are set forth in the Appendix to this Order.

PROCEDURAL MATTERS

Heretofore the Board granted time extensions for additional requests for consolidation by the parties. The Board will consider any requests not previously submitted that are mailed in a one-week period after receipt of this Order.

All parties have been invited and the Licensees and Staff directed to submit testimony on questions raised by the Board. Cross examination of witnesses on these questions will be limited to those who provide direct evidence. The Board will consider, only on request and prior submission to it, questions a nonparticipating party desires to ask; such questions will be allowed only if completeness of the record justifies waiver of the foregoing restriction.

As the schedule reflects, cross-examination plans are required to be submitted. The plans shall be adequate to advise the Board of the party's objectives, the affirmative evidence it expects to extract, and what testimony the party anticipates discrediting.

SCHEDULE

1982

November	19	Responses due to discovery requests on Questions 1, 2 and 5
	26	Final day for noticing depositions on Question 2
	27	Due date for motions to consolidate

December	9	Final day for depositions on Question 2
	10	Final day for noticing depositions on Question 1
	17	FEMA Report due on adequacy of offsite emergency plans
	23	Due date for UCS testimony on Question 2
	28	Responses due from party intervenors supporting or abandoning contentions on Questions 3 and 4
	29	Due date for Westchester County supplemental testimony on Questions 3 and 4
	30	Due date for WBCA testimony on Question 2
1983		
January	3	Hearing on prefiled testimony of Westchester County. One week allotted with time divided equally between the County, Licensees and Staff
	7	Board Order reformulating contentions under Questions 3 and 4.
	7	Due date for Licensees and Staff to file testimony on question 2.
	14	Final day for depositions on Question 1
	18	Hearing on Question 2. Two weeks allotted: Tuesdays through Fridays
	24	Due date for party responses on reformulated contentions under 3 and 4
	24	Due date for testimony from Licensees and Staff on Question 1
	31	Due date for Intervenors testimony on Question 1
February	8	Hearings on Question 1. Two weeks allotted: Tuesdays through Fridays
	8	Board Order finalizing contentions on Questions 3 and 4
	14	Due date for FEMA and all parties to file supplemental testimony on Questions 3 and 4
March	1	Hearings on Questions 3 and 4. Three weeks allotted: Tuesdays through Fridays
	1	Final day for noticing depositions on Question 5
	15	Final day for depositions on Question 5
	22	Last day for noticing depositions on Question 6
	22	Final day for testimony from Licensees, Staff and parties on Question 5
April	5	Hearings on Question 5. One week allotted: Tuesday through Friday
	5	Last day for depositions on Question 6

	12	Final day for testimony from Licensees, Staff and parties on Question 6
	19	Hearing begins on Question 6. One week allotted: Tuesday through Friday
May	27	Due day for proposed findings of fact and conclusions of law
July	29	Date for Board recommendations to the Commission

Note: Cross-examination plans are to be filed with the Board at least three days prior to the hearing to which they apply.

All parties should recognize that the Commission, in this special proceeding, may impose constraints which could alter the above schedule.

ORDER

Upon consideration of the foregoing and the entire record in the matter, it is this 15th day of November, 1982,

ORDERED

1. That the contentions as set forth in the Appendix herein shall be litigated in this proceeding.

2. The words *unacceptably, unacceptable* and *reasonably probable* are deleted from Contention 1.

3. That in providing testimony on Board Question 1.1, the Sandia Laboratory Letter Report on the IPPSS dated August 25, 1982, shall be addressed by the parties, and the parties shall identify and notify all parties and the Board of any additional document reviewing the IPPSS of which they have knowledge.

4. That Contentions 2.1(b) and 2.1(c) are eliminated from the litigation.

5. That Contentions under Commission Questions 3 and 4 will be reformulated after FEMA reports on the adequacy of offsite emergency plan at Indian Point.

6. That Intervenors who have contributed to Contentions under Questions 3 and 4 shall indicate to the Board after FEMA's report, their continued support of the contention and bases or their intention to abandon the contention.

7. That Westchester County officials shall file supplementary testimony on Questions 3 and 4 after the FEMA report, and a hearing on such testimony will commence on January 3, 1983.

8. That the Board reserves until a later date its decision on whether a hearing need be conducted after FEMA reports on the March 8, 1983 emergency planning exercise.

9. That Contention 5.1 and Board Question 5 are eliminated from the proceeding.

10. Licensees and the Staff shall, and party intervenors may, present testimony directly addressing Commission Question 5. Cross-examination on such testimony will be restricted to the parties who present direct testimony on the Question, except as otherwise provided in this Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James P. Gleason, Chairman
ADMINISTRATIVE JUDGE

Dr. Oscar H. Paris
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

APPENDIX

Commission Question 1

What risk may be posed by serious accidents at Indian Point 2 and 3, including accidents not considered in the plants' design basis, pending and after any improvements described in (2) and (4) below? Although not requiring the preparation of an Environmental Impact Statement, the Commission intends that the review with respect to this question be conducted consistent with the guidance provided the Staff in the Statement of Interim Policy on "Nuclear Power Plant

Accident Considerations under the National Environmental Policy Act of 1969"; 44 *F.R.* 40101 (June 13, 1980).[5]

Contention 1.1

The probabilities and consequences of accidents at Indian Point Units 2 and 3 combine to produce high risks of health and property damage not only within the plume exposure EPZ but also beyond the plume exposure EPZ as far as the New York City metropolitan area.

Board Question 1.1

What are the consequences of serious accidents at Indian Point and what is the probability of occurrence of such accidents? In answering this question the parties shall address at least the following documents: (a) the *Indian Point Probabilistic Safety Study* (IPPSS) prepared by the Licensees; (b) the Sandia Laboratory "Letter Report on Review and Evaluation of the Indian Point Probabilistic Safety Study" (Letter Report), dated August 25, 1982; and (c) any other reviews or studies of the IPPSS prepared by or for the Licensees, the NRC Staff, or the Intervenors, or any other document which addresses the accuracy of the IPPSS.

Board Question 1.2

What bearing, if any, do the results reported in NUREG/CR-2497, "Precursors to Potential Severe Core Damage Accidents: 1969-79, A Status Report" (1982), have upon the reliability of the IPPSS? For example, are there specific accident scenarios at Indian Point whose probability may have been inaccurately estimated in light of the real-life data reported and analyzed in NUREG/CR-2497?

Board Question 1.3

What are the probabilities associated with the consequences presented in the testimony of Dr. Beyea and Mr. Palenik?

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[5] In particular, that policy statement indicates that:

> Attention shall be given both to the probability of occurrences of releases and to the environmental consequences of such releases;
>
> The reviews "shall include a reasoned consideration of the environmental risks (impacts) attributable to accidents at the particular facility or facilities . . .";
>
> "Approximately equal attention should be given to the probability of occurrence of releases and to the probability of occurrence of the environmental consequences . . ."; and
>
> Such studies "will take into account significant site and plant-specific features . . ."
>
> Thus, a description of a release scenario must include a discussion of the probability of such a release for the specific Indian Point plants.

Board Question 1.4

What risk to public health and safety is presented by the Indian Point plants through a chain of events including pressurized thermal shock to the reactor pressure vessels?

Commission Question 2

What improvements in the level of safety will result from measures required or referenced in the Director's Order to the licensee, dated February 11, 1980? (A contention by a party that one or more specific safety measures, in addition to those identified or referenced by the Director, should be required as a condition of operation would be within the scope of this inquiry if, according to the Licensing Board, admission of the contentions seems likely to be important to resolving whether: (a) there exists a significant risk to public health and safety, notwithstanding the Director's measures, and (b) the additional proposed measures would result in a significant reduction in that risk).

Contention 2.1(a)

A filtered vented containment system for each unit must be installed.

Contention 2.1(d)

A separate containment structure must be provided into which excess pressure from accidents and transients can be relieved without necessitating releases to the environment, thereby reducing the risk of containment failure by overpressurization.

Contention 2.2(a)

The cooling system at the plants should be changed so that it no longer uses brackish Hudson River water. This change is needed to combat safety-related corrosion problems.

Contention 2.2(b)

The residual risk posed by the Indian Point plants and discussed under Board Question 1.4 above is great enough to justify remedial measures to prevent pressure vessel damage by pressurized thermal shock. The specific measures needed include one or more of the following:

(i) pressure vessel replacement;
(ii) *in situ* annealing of the pressure vessel;

(iii) revision of technical specifications to reduce the probability of pressurized thermal shock;
(iv) use of preheated water for safety injection.

Board Question 2.2.1

Should any of the requirements proposed at the July 29, 1982, meeting of the NRC Staff and members of the SGOG be required for Indian Point Units 2 and/or 3, considering the risk of a steam generator tube rupture in this high population area?

Commission Question 3

What is the current status and degree of conformance with NRC/FEMA guidelines of state and local emergency planning within a 10-mile radius of the site and, of the extent that it is relevant to risks posed by the two plants, beyond a 10-mile radius? In this context, an effort should be made to establish what the minimum number of hours' warning for an effective evacuation of a 10-mile quadrant at Indian Point would be. The FEMA position should be taken as a rebuttable presumption for this estimate.

Commission Question 4

What improvements in the level of emergency planning can be expected in the near future, and on what time schedule, and are there other specific offsite emergency procedures that are feasible and should be taken to protect the public?

Contentions under Commission Questions 3 and 4 will be reformulated later (see Schedule in Order).

Commission Question 5

Based on the foregoing, how do the risks posed by Indian Point Units 2 and 3 compare with the range of risks posed by other nuclear power plants licensed to operate by the Commission? (The Board should limit its inquiry to generic examination of the range of risks and not go into any site-specific examination other than for Indian Point itself, except to the extent raised by the Task Force.)

The NRC Staff and Licensees shall, and other parties may, present testimony which directly addresses Commission Question 5.

Commission Question 6

What would be the energy, environmental, economic or other consequences of a shutdown of Indian Point Unit 2 and/or Unit 3?

Contention 6.1

An economic consequence of the shutdown of Indian Point Units 2 and 3 would be an economic benefit accruing to Rockland County through the sale of replacement power.

Contention 6.2

A benefit would accrue from the shutdown of Indian Point Units 2 and 3 because the environment of children in the vicinity would be improved by a decrease in the release of radioactive material.

Contention 6.3

Considering the savings in operating expense which would result from shutting down Indian Point Units 2 and 3, and allowing for the ways in which cogeneration and conservation can mitigate the costs of replacement power, the net costs of shutdown are small; in fact, they are smaller than previous studies by UCS, GAO, or Rand suggest, and are entirely acceptable.

Cite as 16 NRC 1649 (1982) **LBP-82-106**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Helen F. Hoyt, Chairman
Dr. Emmeth A. Luebke
Dr. Jerry Harbour

In the Matter of

Docket Nos. 50-443-OL
50-444-OL
(ASLBP No. 82-471-02-OL)

PUBLIC SERVICE COMPANY
OF NEW HAMPSHIRE, *et al.*
(Seabrook Station, Units 1 and 2)

November 17, 1982

The Licensing Board denies motions for certification of objections to its Prehearing Conference Order rulings on the admissibility of contentions. The Licensing Board grants in part and denies in part motions for reconsideration of that order.

RULES OF PRACTICE: INTERLOCUTORY APPEALS

Although interlocutory appeal is generally prohibited, 10 CFR §2.730(f), certification is permitted where it is shown that failure to resolve the issue immediately will cause detriment to the public interest or unusual delay or expense.

RULES OF PRACTICE: INTERLOCUTORY APPEALS

An interlocutory appeal will only be accepted where a Licensing Board's ruling either (1) threatened appellant with immediate and serious irreparable impact or (2) affected the basic structure of the proceeding in a pervasive or unusual manner. *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1192 (1977).

RULES OF PRACTICE: INTERLOCUTORY APPEALS

Certification is particularly inappropriate where the subject of the interlocutory appeal is a Licensing Board's rejections of contentions. *Project Management Corporation, Tennessee Valley Authority* (Clinch River Breeder Reactor Plant, ALAB-326, 3 NRC 406 (1976).

RULES OF PRACTICE: INTERLOCUTORY APPEALS; MOTIONS FOR RECONSIDERATION

A Licensing Board may treat an interlocutory appeal as a motion for reconsideration. *Public Service Company of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-370, 5 NRC 131 (1977).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

10 CFR §2.714 requires a petitioner to set forth the bases for each contention with reasonable specificity. This standard requires that a contention be stated with particularity (*Alabama Power Co.* (Joseph M. Farley Nuclear Power Plant, Units 1 and 2), ALAB-183, 7 AEC 210, 216 (1974)), and that the petitioner state the "reasons" for its concern (*Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 548 (1980)). The standard does not require the Licensing Board to address the merits of a contention when determining its admissibility (*id.*) and does not require the petitioner to detail supporting evidence (*Mississippi Power and Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 426 (1973)).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

In delineating the reason (*i.e.*, basis) for a contention, an intervenor should establish a nexus between the substance of the contention and the statutory and regulatory scope of a Licensing Board's concern. To do so, an intervenor should allege with particularity that a part of an applicant's plant or operation thereof fails to comply with a specified regulation; or in the case where there is a "regulatory gap," an intervenor should allege that such a regulatory gap exists and allege with particularity facts that if proven would warrant concern. Where there is no allegation of non-compliance with a specified regulation, a Licensing Board must discern whether a reasonably prudent person would be concerned by the contention. *Consumers Power Co.* (Midland Plant, Units 1 and 2), CLI-74-5, 7 AEC 19, 32 n.27 (1974), *rev'd sub nom., Aeschliman* v. *NRC*, 547 F.2d 622 (D.C. Cir. 1976), *rev'd sub nom., Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519, 553-54 (1978).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

Generic safety issues may be the subject of a contention, but such a contention must establish a nexus between the issue and the license application. In particular, the contention must show that 1) the generic issue has safety significance for the particular reactor and 2) the fashion in which the application deals with the matter is unsatisfactory or the short-term solution offered to the problem under study is inadequate. *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

A Licensing Board's declination to rewrite inadmissible contentions does not constitute error. *Commonwealth Edison Co.* (Zion Station, Units 1 and 2), ALAB-226, 8 AEC 381, 406 (1974).

REGULATIONS: INTERPRETATION

10 CFR §50.47(a)(2) precludes a Licensing Board from requiring completed preparedness exercises prior to a licensing decision; the section does not obviate planning requirements.

MEMORANDUM AND ORDER

(Addressing Intervenors' Motions for Reconsideration of the Board's Prehearing Conference Order and Motions for Certification)

MEMORANDUM

I. INTRODUCTION

On September 13, 1982, this Board issued a Memorandum and Order ruling on the admissibility of Intervenors' contentions. LBP-82-76, 16 NRC 1029 (1982) (hereinafter referred to as the Prehearing Conference Order). Subsequently, the

New England Coalition on Nuclear Pollution (NECNP) filed objections to the Order together with a Motion to Certify Objections to the Appeal Board; the State of New Hampshire (NH) filed objections and a Motion for Reconsideration; and Seacoast Anti-Pollution League (SAPL) filed objections and a Motion for Reconsideration and a Motion to Certify Objections to the Appeal Board. On October 1, 1982, this Board by Order permitted a party to reply to NECNP's and NH's objections. Replies from Applicants and the NRC Staff were received on October 26 and November 1, 1982, respectively.[1] This Memorandum and Order addresses those motions and replies.

By this Memorandum and Order, the Board has reconsidered all objections and motions of Intervenors and the following contentions of the named Intervenors are by this Memorandum and Order accepted for litigation in this case:

Intervenor	Contention	
New England Coalition on Nuclear Power	III.1.	Emergency Classification
	III.2.	Simultaneous Emergencies
	III.3.	Shift Supervisor Training
	III.12.	Evacuation Time Estimates
	III.13.	Evacuation Time Estimates

All other motions and objections are denied.

II. CERTIFICATION TO THE APPEAL BOARD

Questions concerning certification by this Board to the Appeal Board of rulings on contentions by the Board objected to by the offering Intervenor will be disposed of before discussion of any reconsideration of contentions.

A. Legal Standards

The Commission's Rules of Practice contain a general prohibition against interlocutory appeal. 10 CFR §2.730(f). Nevertheless, there is an exception. The regulations permit discretionary interlocutory review, either by Licensing Board certification or Appeal Board directed certification, where it is demonstrated that failure to resolve the issue immediately will cause "detriment to the public interest or unusual delay or expense." The Appeal Board, however, has left little doubt that such review is truly exceptional. The Appeal Board has stated that it will rarely take interlocutory review and only then where a Licensing Board's ruling "either (1) threatened the party adversely affected by it with immediate and serious irreparable impact which, as a practical matter, could not be alleviated by a later appeal, or (2) affected the basic structure of the proceeding in a pervasive or unusual manner." *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1192 (1977). Moreover, certification is particularly inappropriate when the subject of the interlocutory review sought is Licensing Board rejections of contentions. *Project Management Corporation, Tennessee Valley Authority* (Clinch River Breeder Reactor Plant), ALAB-326, 3 NRC 406 (1976). A Licensing Board may, however, treat an interlocutory appeal as a motion for reconsideration. *Public Service Company of Oklahoma* (Black Fox Station, Units 1 and 2), ALAB-370, 5 NRC 131 (1977).

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[1] Extension of time from those dates set by the Order to these actual filing dates was granted by telephone with Applicants on October 15, 1982. The NRC Staff, NH and NECNP concurred.

B. NECNP's Motion for Certification

NECNP, in support of its motion, asserts that the Board should certify its exceptions in order to avoid delay. NECNP does not, however, make the requisite showing that failure to resolve its objections immediately will cause "detriment to the public interest or *unusual* delay or expense." NECNP has made no showing that our rulings threaten NECNP with "immediate and serious irreparable impact." Furthermore, this Board can perceive no such detriment or impact. Accordingly, the Board denies NECNP's motion for certification, and instead treats it as a motion for reconsideration.

C. SAPL's Motion for Certification

SAPL's motion for certification, proffered in the alternative, is similarly defective. SAPL simply fails to address the factors which might justify exceptional interlocutory review; furthermore, the Board perceives no such justification. Accordingly, the Board also denies SAPL's Motion for Certification.

III. NECNP'S MOTION

As stated above, the Board is treating NECNP's motion as a motion for reconsideration. In reviewing NECNP's motion, the Board notes its general criticism that the Board gave little explanation in the Prehearing Conference Order of the standards applied to determine the admissibility of contentions. This Board will not engage in fruitless arguments and obvious disappointments suffered by an Intervenor, but will use this order to lay out clearly the concerns the Board considered in the initial order so no doubt remains as to the process this Board used in applying the Commission's legal standards to an Intervenor's proposed contention. When this Board is faced with the verbose or the succinct, the Board has and will choose the latter.

A. Legal Standard of Admissibility of Contentions

The standard for adjudging the admissibility of contentions is established by the Commission's Rules of Practice. Section 714 of the Rules of Practice, 10 CFR §2.714, requires a petitioner to set forth the bases for each contention with reasonable specificity.[2] It is this standard that we have applied.

The Appeal Board has, on several occasions, addressed the standard. While the "basis with reasonable specificity" standard requires a contention to be stated with particularity, *Alabama Power Co.* (Joseph M. Farley Nuclear Power Plant, Units 1 and 2), ALAB-183, 7 AEC 210, 216 (1974), it does not require a petition to detail supporting evidence. *Mississippi Power and Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 426 (1973). Nor should a licensing board address the merits of a contention when determining its admissibility. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542 (1980). What is required is that an intervenor state the "reasons" for its concern. *Id.* at 548.

Unfortunately, despite the Appeal Board's guidance, the basis requirement remains somewhat nebulous and is often overstated. Nevertheless, this Board believes that a workable test can be obtained if the basis requirement is related to those ultimate findings a licensing board is required to make (*i.e.*, "that operation of the plant is not inimical to the public health and safety, or to the national defense or security," 10 CFR §50.57(a)(3) and (6),[3] and that the provisions of the National Environmental Policy Act (NEPA) have been properly applied, 10 CFR §51.52). Therefore, in delineating the reason (*i.e.*, basis) for its contention, an intervenor should establish a nexus between the substance of the contention and the statutory and regulatory scope of our concern.

With regard to safety issues, Applicant cited *Maine Yankee Atomic Power Company* (Maine Yankee Atomic Power Station), ALAB-161, 6 AEC 1003

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[2] The basis with specificity standard was upheld as a reasonable requirement in *BPI* v. *AEC*, 502 F.2d 424 (D.C. Cir. 1974).

[3] These requirements are also part of the Atomic Energy Act of 1954, §104(d), 42 U.S.C. §2134(d) (1980).

(1973) for the proposition that an applicant meets its burden in an operating license hearing when it demonstrates compliance with the regulations. *See, e.g.*, Response of Applicants to Contentions Filed by Seacoast Anti-Pollution League (April 15, 1982) at p. 4. If this proposition were true, then in order to establish as a basis the nexus between a contention and the scope of our regulatory concern, an intervenor would have to allege with particularity that a part of Applicants' plant or operation thereof fails to comply with a specified regulation.

Applicants' interpretation of *Maine Yankee* is too narrow. Where the regulations are silent on a particular matter and that matter is in contention, compliance with the regulations is not by itself sufficient to satisfy an applicant's burden of proof. *Maine Yankee, supra*, at 1010. However, in the case where there is a regulatory gap, we think it incumbent upon an intervenor, pursuant to the basis requirement, to allege that such a regulatory gap exists and to allege with particularity facts that if proven would warrant concern. In such a case, a Board must scrutinize the allegation carefully, in order to avoid frivolous and inconsequential contentions.[4] This scrutiny does not require a licensing board to rule on the merits of a contention. Rather, a licensing board should examine contentions objectively; when there is no allegation of non-compliance with a specified regulation, a board must discern whether a reasonably prudent person would be concerned by the particular contention.[5] Only in this manner can a licensing board and the NRC

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[4] The "basis with specificity" requirement was added to 10 CFR §2.714 in order to avoid nuisance intervention; this fact was recognized by the U.S. Court of Appeals for the U.C. Circuit in its decision upholding the requirement. *BPI* v. *AEC*, 502 F.2d 424, 428 (1974). *See also Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20 (1974).

> A purpose of the basis-for-contention requirement in Section 2.714 is to help assure at the pleading stage that the hearing process is not improperly invoked. For example, a licensing proceeding before this agency is plainly not the proper forum for an attack on applicable statutory requirements or for challenges to the basic structure of the Commission's regulatory process. Another purpose is to help assure that other parties are sufficiently put on notice so that they will know at least generally what they will have to defend against or oppose. Still another purpose is to assure that the proposed issues are proper for adjudication in that particular proceeding. In the final analysis, there must ultimately be strict observance of the requirements governing intervention, in order that the adjudicatory process is invoked only by those persons who have real interests at stake and who seek resolution of concrete issues.

Id. (footnotes omitted).

[5] *Consumers Power Co.* (Midland Plant, Units 1 and 2), CLI-74-5, 7 AEC 19 (1974), *rev'd sub nom. Aeschliman* v. *NRC*, 547 F.2d 622 (D.C. Cir. 1976), *rev'd sub nom. Vermont Yankee Nuclear Power Corp.* v. *Natural Resources Defense Counsel*, 435 U.S. 519, 553-54 (1978). "[T]he showing should be sufficient to require reasonable minds to inquire further." *Id.* at 32 n.27. *Cf. Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), LBP-82-16, 15 NRC 566, 583 (1982), and *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674, 675 (1980), conditioning admissibility of safety contentions on the postulation of "*credible*" accident scenarios. *See also Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20 (1974). "The degree of specificity with which the basis for a contention must be alleged initially involves the exercise of judgment on a case by case basis." *Id.*

We realize that we are making a fine distinction between what we believe is a permissible objective scrutiny of a "regulatory gap" contention and an impermissible rejection on the merits. We stress, however, that we do not advocate an evaluation of the merits of a contention to determine its

(Continued)

marshall their resources to satisfy the mandate of the Atomic Energy Act. A standard that focuses a licensing board's review on relevant and substantial safety issues is consonant with that mandate and vindicates the public interest; therefore, the standard, though it may restrict intervention, is reasonable and proper.[6]

In conclusion, this Board believes that the basis with reasonable specificity standard requires that an intervenor include in a safety contention a statement of the reason for his contention. This statement must either allege with particularity[7] that an applicant is not complying with a specified regulation, or allege with particularity the existence and detail of a substantial safety issue on which the regulations are silent. In the absence of a "regulatory gap," the failure to allege a violation of the regulations or an attempt to advocate stricter requirements than those imposed by the regulations will result in a rejection of the contention, the latter as an impermissible collateral attack on the Commission's rules (10 CFR §2.758).

B. NECNP's Specific Objectives

NECNP objects to every Board ruling that denied admission of an NECNP contention. The Board has reviewed NECNP's objections and the replies of Staff and Applicants. With respect to certain of NECNP's on-site emergency planning contentions, the Board grants NECNP's motion to include these in this litigation. In all other cases, the Board finds NECNP's objections to be without merit. In some instances where the Board has reaffirmed a prior ruling, there is some clarification; however, over thirty pages of the Prehearing Conference Order were devoted to rulings on NECNP contentions, the Board will not repeat that analysis.

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admissibility. What we do believe is proper is the rejection of inconsequential contentions, *i.e.*, (1) those contentions about which a reasonably prudent person, accepting the facts as alleged, would not be concerned, and (2) those contentions that merely make bald allegations of which a reasonably prudent person would be highly skeptical.

We distinguish the latter from the factual situation in *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542 (1980), wherein the Appeal Board reversed a Licensing Board's rejection of a contention. In *Allens Creek*, the petitioner had pointed to an ongoing project in support of his allegation of the environmental superiority of a biomass energy alternative; the Appeal Board held that petitioner's allegation *and reference to the project* satisfied the pleading requirements, and that the Licensing Board had improperly rejected the contention on the merits. We do not believe this decision precludes our rejection of regulatory gap contentions that comprise mere conclusory allegations. Unless a bald allegation can stand by itself — *i.e.*, withstands objective scrutiny — it is simply not a "reason" and does not supply the requisite basis for the admission of a "regulatory gap" contention, particularly when viewed against the complex and comprehensive safety parameters delineated by the NRC's regulations.

[6] *BPI* v. *AEC*, 502 F.2d 424, 426-28 (D.C. Cir. 1974); *Office of Communication of United Church of Christ* v. *FCC*, 359 F.2d 994, 1005-06 (D.C. Cir. 1966); Gelhorn, *Public Participation in Administrative Proceedings*, 81 YALE L.J. 359, 376-77 (1972).

[7] Particularity requires not only an allegation of the fact of non-compliance with a specified regulation, but also sufficient detail to permit the Board to determine *how* the regulation is supposedly being violated. This specificity is necessary to avoid admitting a contention that misstates a regulatory requirement or collaterally attacks that regulation by seeking to impose extra-regulatory requirements. *See* note 4, *supra*.

I.A.1. Environmental Qualification — Electrical Equipment

The Board reaffirms its denial. In CLI-80-21, the Commission ordered that NUREG-0588 "form the requirements which . . . applicants must meet in order to satisfy those aspects of 10 CFR 50, Appendix A, General Design Criteria (GDC)-4 which relate to environmental qualification of safety-related electrical equipment." (footnote omitted) *Petition for Emergency and Remedial Action*, CLI-80-21, 11 NRC 707, 711 (1980). NECNP seeks to impose regulatory requirements in excess of those established by GDC-4 and CLI-80-21. Therefore, it is an impermissible attack on the regulations.[8]

I.A.3. Environmental Qualification for Hydrogen Burn

The Board reaffirms its denial of NECNP Contention I.A.3.

I.E. Reactor Coolant Pump Flywheel Integrity

The Board reaffirms its denial. NECNP Contention I.E. asserts *inter alia* that the Reactor Coolant Pump Flywheel should be environmentally qualified because it is important to safety. There is no indication, however, that the flywheel is safety-related (*i.e.*, that it is necessary to a safe shutdown of the plant), and accordingly, the Board finds no regulatory requirement that the flywheel be environmentally qualified.

I.H. Decay Heat Removal

The Board reaffirms its denial of this contention. Generic safety issues may be the subject of a contention, but such a contention must establish a nexus between the issue and the particular license application. *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977). In particular, the contention must show (1) that the generic issue has safety significance for the particular reactor and (2) that "the fashion in which the application deals with the matter in question is unsatisfactory . . . *or* that the short-term solution offered in application to [the] problem under staff study is inadequate." *Id.* at 773. NECNP has not provided this information. However, because the Staff's analysis of the generic study issue is not yet complete and NECNP is not yet in a position to address the "short-term solution," this Board believes that the Appeal Board's decision in *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982), applies. It was cited in the Prehearing Conference Order, *supra*.

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[8] The Commission has permitted an exception to the general prohibition against collateral attack of its rules. It permits contentions addressing the sufficiency of TMI Action Plan requirements (NUREG-0737) supplementing NRC regulations. *Statement of Policy: Further Commission Guidance for Power Reactor Operating Licenses*, CLI-80-42, 12 NRC 654 (1980). The exception, however, does not obviate the Commission's pleading requirements, and NECNP has advanced no reason for the Board to consider the sufficiency of the requirements of CLI-80-21 and of NUREG-0737.

I.O.1. Emergency Feedwater

The Board reaffirms its denial of this contention. The Board has described *supra* the standard used in determining admissibility of contentions, and using this standard, has determined NECNP Contention I.O.1. to be without basis. There is no regulatory requirement that "the emergency feedwater system [be] single failure-proof with respect to a rupture of the high-energy piping in the discharge header," (16 NRC 1059) and NECNP has not advanced with particularity a reason for imposing such a requirement.

I.O.2. Emergency Feedwater

The Board reaffirms its ruling on this contention.

I.P. Human Engineering

The Board reaffirms its ruling on this contention; NECNP provided no basis for the contention. The Board also notes that Applicants state they are amending the FSAR to indicate that the Multi Point recorder with which this contention was concerned will not be located on the back of the panel. Therefore, NECNP Contention I.P. will soon be moot.

I.Q. Systems Interaction

The Board reaffirms its ruling on this contention. The contention sought to raise an unresolved generic safety issue, but failed to provide a basis or specificity for the contention. The discussion of the pleading requirements for unresolved generic safety issues is set out in this order at pp. 1657-58, *supra*, as is the discussion of the potential applicability of ALAB-687.

I.R. Hydrogen Control

The Board reaffirms its ruling.

I.S. Loose Parts Detection System

The Board reaffirms its ruling. NECNP provided no basis with specificity for its contention, and the Board iterates that Regulatory Guides do not impose regulatory requirements. Board notes, however, that Applicants have committed to install a loose parts detection system that complies with Reg. Guide 1.133, and this commitment will moot NECNP's contention.

I.T. Steam Generators

The Board reaffirms its ruling.

I.V. In-Service Inspection of Steam Generator Tubes

The Board reaffirms its rulings. Even if Applicants' compliance with Reg. Guide 1.83 is not conclusive as to compliance with the underlying regulations (10 CFR Part 50, App. A, GDC 14, 15, 31, and 32), it is at least presumptive. Moreover, Intervenors have failed to specify how Applicants are in non-compliance, and thus have failed to satisfy the pleading requirements.

I.W. Seismic Qualification of Electrical Equipment

The Board reaffirms its ruling. NECNP Contention I.W. was vague and without basis. NECNP is directed to our discussion at pp. 1657-58, *supra*, of the pleading requirements for unresolved generic safety issues and of the potential applicability of ALAB-687.

II.A.1. Quality Assurance — Design and Construction

The Board reaffirms its ruling.

II.A.2. Quality Assurance — Design and Construction

The Board reaffirms its ruling. NECNP's objection to this ruling takes our statement, that "design is not for litigation" out of context. A *specific design deficiency*, supported by adequate basis, could be a valid contention. The Board stated that "the design," *i.e.*, all aspects of the Seabrook engineering and construction, could not be litigated, as NECNP was clearly seeking to do. NECNP's general allegation that Seabrook "has [not] been designed or constructed in accordance with applicable requirements" was fatally vague; and though NECNP offered specific instances of QA deficiencies, it made it clear that it did not intend its contention to be limited to these *specific deficiencies*. NECNP II.A.2. was vague and unlitigable.

NECNP also objects to the Board's refusal to rewrite its contention; NECNP asserts that this refusal was "excessively rigid." However, it had been made clear to the parties on numerous occasions that this Board would not rewrite an Intervenor's contentions. Refusal to do so cannot constitute error. *Commonwealth Edison Company* (Zion Station, Units 1 and 2), ALAB-226, 8 AEC 381, 406 (1974). Furthermore, the parties were afforded several opportunities to reformulate their own contentions to meet requirements.

II.B.2. Quality Assurance for Operations

The Board reaffirms its order. The Board inadvertently omitted the last sentence of NECNP's contention in the Prehearing Conference Order, *supra*. The omission had no effect on the Board's decision. The contention, including the reference to NECNP Contention II.A.1., was not sufficiently specific.

NECNP III. Emergency Planning

Upon reconsideration, the Board amends its ruling on the Emergency Planning contention. The Prehearing Conference Order, *supra*, treated NECNP III, with its 15 subparts, as one contention. Because parts of it address not-yet existing offsite emergency plans and were, by necessity, fatally nonspecific, the Board denied admission of the contentions pursuant to ALAB-687. This approach has resulted in a disparity in our treatment of NECNP's and other intervenors' on-site emergency planning contentions. Accordingly, in order to rectify this disparity, the Board now addresses each subpart to NECNP as a separate contention.

III.1. Emergency Classification

The Board admits this contention. The Board perceives 10 CFR §50.47(b)(4) to be its regulatory basis, and rejects Applicants' assertion that NECNP is seeking to elevate NUREG-0654 to the significance and dignity of a regulation. NECNP's reference to NUREG-0654 is gratuitous and superfluous.

III.2. Simultaneous Emergencies

The Board admits this contention; neither Staff nor Applicants objected to its admissibility and the Board on reconsideration finds sufficient basis for admitting it.

III.3. Shift Supervisor Training

The Board admits this contention. Staff found the contention acceptable, and the Board rejects Applicants' assertion that 10 CFR §50.47(a)(2) precludes its admission. That section of the regulations merely precludes a Board from requiring completed *preparedness exercises* prior to a licensing decision; the section does not obviate *planning* requirements.

III.4. EPZ

The Board rejects this contention. The contention is vague. Moreover, the true thrust of the contention is with actual evacuation procedures. Indeed, the regulations anticipate that the EPZs will be determined "in relation to local emergency response needs and capabilities." 10 CFR §50.47(c)(2). These needs and capabilities will not be known until after the off-site emergency plans are completed; therefore, only *after* issuance of the off-site plans can the requisite degree of specificity be applied to NECNP's concern. Accordingly, pursuant to ALAB-687, NECNP will be permitted, if it so choses, to submit a revised specific contention after issuance of the off-site plans.

III.5. EPZs

The Board rejects this contention. There is no regulatory requirement in support of, and hence no basis for, NECNP's bald assertion that beyond design basis accidents must be considered by Applicants in establishing the EPZs. In fact, such consideration is inherent in and obviated by the Commission's delineation of the bounds of the plume exposure pathway EPZ. 10 CFR §50.47(c)(2); 10 CFR Part 50, App. E, fn. 2. Consideration of beyond design basis accidents is also inherent in the other emergency response requirements. Furthermore, the Board finds that this contention advocates a plume exposure pathway EPZ in excess of the regulatory requirements and is an impermissible collateral attack on those regulations.

III.6. Off-Site Plans

The Board rejects this contention. ALAB-687 prohibits the admission of premature, nonspecific contentions. This Board will not admit contentions dealing with off-site plans until these are formulated and an intervenor has had an opportunity to examine them. Even NECNP admits this when it states that the present contention is subject to complete revision when these documents are issued.

III.7. Accident Sequences/Process Monitors

The Board rejects this contention. The contention alleges *inter alia* that "Applicants have failed to demonstrate that *all possible* accident sequences can be monitored." It is fatally vague. The contention also asserts that the process monitors do not comply with the regulatory requirements, but does not indicate how they fail to comply. NECNP's concern apparently rests on a statement in the FSAR that the Applicants "address" Reg. Guide 1.97. However, whether or not "address" means "comply with" is irrelevant, since the Reg. Guide is not a regulation and NECNP points to no specific deficiency.

III.8. Computerized Monitoring System

The Board rejects this contention. There is no regulatory requirement for a computerized monitoring system, and NECNP does not provide an adequate reason for the Board to consider imposing such a requirement. Accordingly, the contention is without basis.

III.9. Back-up Power Source for Computer Used in Dose Assessment

The Board rejects this contention. The Board notes that it had difficulty discerning if the first two sentences of the contention were prefatory, or if they were themselves contentions. However, NECNP's assertion in the third sentence, that computers used in making dose assessments must be provided a back-up power source, is without a regulatory basis.

III.10. Public Notification

The Board rejects this contention for lack of specificity. When the off-site plans are issued, NECNP may submit a contention that specifically addresses the planned public notification procedures. ALAB-687 applies.

III.11. Sheltering

The Board rejects this contention for lack of specificity. When the off-site plans are issued, NECNP may submit a contention that specifically addresses the planned sheltering provisions. ALAB-687 applies.

III.12. Evacuation Time Estimates

The Board admits this contention; both Staff and Applicants found it acceptable and the Board on reconsideration finds sufficient basis for admitting it.

III.13. Evacuation Time Estimates

The Board admits this contention. The Staff found it acceptable. Applicants' response goes to the merits. The Board finds sufficient basis for admitting it.

III.14. Emergency Plans

The Board rejects this contention. The contention calls for a conclusion based on not-yet existing off-site plans. It is fatally vague. When the off-site plans are issued, NECNP may submit specific contentions addressing those plans, pursuant to ALAB-687.

III.15. Baseline Data

The Board rejects this contention. NECNP is seeking to impose on Applicants an extra-regulatory requirement, and has failed to provide adequate reason for the Board to consider imposing the requirement.

NECNP IV. Blockage of Coolant Flow to Safety-Related Systems and Components by Buildup of Biological Organisms

The Board reaffirms its ruling.

NECNP V. Table S-3

The Board reaffirms its ruling.

IV. NH'S MOTION

NH has filed objections to and moves that the Board reconsider five of the Prehearing Conference Order, *supra*, rulings. The Board has reviewed these objections and the responses to them and finds NH position to be without merit.

NH-2. Systems Interaction

The Board reaffirms its ruling. NH-2 is without basis; there is no regulatory requirement that Applicants perform a systems interaction analysis, and NH fails to provide an adequate reason for the Board to consider the imposition of such a requirement. NH confuses the requirements of the NEPA with the safety requirements of the Atomic Energy Act. The Commission's requirement that a NEPA analysis include consideration of Class IX accidents cannot be equated with a health and safety requirement; however, neither the safety regulations nor the NEPA regulations impose what NH seeks.

NH-5. Liquid Pathway

The Board reaffirms its ruling. The contention is vague and without basis. Furthermore, NH is again confusing NEPA requirements with safety requirements, or is attempting to turn the former into the latter.[9]

NH-6. Environmental Qualification of Safety-Related Equipment

The Board reaffirms its ruling. Subpart (d) of this contention is no more specific than the other subparts.

NH-12. Quality Assurance

The Board reaffirms its ruling. NH-12 is absolutely devoid of specificity.

NH-14. Reliable Operation Under On-Site Emergency Power

The Board reaffirms its ruling. NH-14 lacks basis and specificity.

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[9] In its Motion for Reconsideration, NH points to the absence of information in Applicants' final, *safety* analysis; the contention, however, asserts that Applicants *environmental* analysis is inadequate.

Discovery Schedule

NH has also requested additional time for discovery. In part, this request appears predicated on the Board's admission on reconsideration of previously rejected NH contentions. Since this Board has denied NH's objections, this basis for NH's request fails. However, NH also asserts that the present schedule should be extended to allow "a more meaningful period of discovery and a fairer hearing." NH makes a vague reference to forthcoming documents.

As stated in the Prehearing Conference Order, *supra*, the Board will grant extensions of discovery schedule *upon good cause shown*. This Board will not, however, grant a request *in vacuo;* NH's request is a generalized statement of concern, is devoid of specifics on which the Board can make a reasoned judgment, and is therefore insufficient. Accordingly, NH's motion for an extension of the discovery schedule is denied without prejudice.

V. SAPL'S MOTION

SAPL objects only to our ruling denying SAPL's Supp. IV, an alternative source contention. SAPL has submitted affidavits which it asserts make a *prima facie* showing that application of the need for power rule will not serve the purposes for which the rule was formulated. This Board disagrees. SAPL has only made a showing that another energy source exists. It has made no attempt to compare costs or environmental impact in order to show that Seabrook is a special case (*i.e.*, that Canadian hydroelectric power is a viable alternative which could tip the NEPA cost-benefit balance against issuance of the operating license). Furthermore, SAPL's motion indicated that it considers construction costs to be relevant to this inquiry; however, the appropriate economic analysis required by NEPA in this operating license proceeding is a comparison only of Seabrook's operating costs (including fuel and maintenance) with alternatives, because the decision of this licensing board concerns only whether Seabrook will or will not be permitted to operate. Construction has already been approved, and the Board must consider construction costs to be "sunk" costs and irrelevant to future operation.

Accordingly, SAPL's motion is denied.

ORDER

Based on the foregoing discussion, it is this 17th day of November, 1982, ORDERED

1. That NECNP's and SAPL's motions for certification are denied;

2. That this Board's Prehearing Conference Order, *supra*, is vacated to the extent that the Board now admits NECNP Contentions III.1, III.2, III.3, III.12, and III.13;

3. That all other rulings on NECNP, NH, and SAPL contentions are reaffirmed;

4. That NH's request for an extension of the discovery schedule is denied without prejudice.

IT IS SO ORDERED

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Helen F. Hoyt, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 17th day of November, 1982.

Cite as 16 NRC 1667 (1982) LBP-82-107

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris

In the Matter of **Docket No. 50-322-OL**
(Emergency Planning)

LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1) **November 19, 1982**

The Licensing Board concludes that it has the authority under the Administrative Procedure Act, the Atomic Energy Act and NRC Regulations to direct that the parties to the Shoreham operating licensing proceeding conduct their initial cross-examination, redirect and recross-examination with the respect to Phase I (primarily onsite) emergency planning issues by means of prehearing examinations in the nature of depositions. The Board orders that such examinations be held to expedite this proceeding and directs that portions of the transcripts of such examinations may be moved into evidence. Follow-up questions from the Board and parties would then be permitted at formal hearings before the Board.

ATOMIC ENERGY ACT: HEARINGS

The Atomic Energy Act does not itself specify the nature of the hearings required to be held pursuant to Section 189(a), 42 USC §2239; its reference to "a hearing" neither distinguishes between rulemaking and adjudication nor states explicitly whether either must be conducted through formal "on the record" proceedings. However, "[the] Commission has . . . invariably distinguished between the two, and has provided formal hearings in licensing cases, as contrasted with informal hearings in rulemaking proceedings confined to written submissions and non-record interviews." *Siegel* v. *Atomic Energy Commission*, 400 F.2d 778, 785 (D.C. Cir. 1968); *Citizens For a Safe Environment* v. *Atomic Energy Commission*, 489 F.2d 1018, 1021 (3rd Cir. 1974).

ADMINISTRATIVE PROCEDURE ACT: SCOPE OF CROSS-EXAMINATION

By virtue of Section 181 of the Atomic Energy Act, 42 USC §2231, "the provisions of the Administrative Procedure Act shall apply to all agency action taken under this Act." Pursuant to Section 7(c) of the APA, 5 USC §556(d), a party to an administrative adjudicatory hearing does not have an unlimited right to cross-examine witnesses, but is instead entitled only "to conduct such cross-examination as may be required for a full and true disclosure of the facts."

ADMINISTRATIVE PROCEDURE ACT: CROSS-EXAMINATION

Directing that parties to an operating license proceeding conduct their initial cross-examination by means of prehearing examinations in the nature of depositions is not violative of the APA, so long as the procedure employed does not prejudice the rights of any party. Administrative Procedure Act, Section 7(c), 5 USC §556(d).

RULES OF PRACTICE: CROSS-EXAMINATION

A licensing board has the authority to direct that parties to an operating license proceeding conduct their initial cross-examination by means of prehearing examinations in the nature of depositions. Pursuant to 10 CFR §2.718, a board has the power to regulate the course of the hearing and the conduct of the participants, as well as to take any other action consistent with the APA. *See also* 10 CFR §2.757, 10 CFR Part 2, App. A, IV. In expediting the hearing process using the case management methods contained in Part 2, a board should ensure that the hearings are fair, and produce a record which leads to high quality decisions and adequately protect the public health and safety and the environment. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 453 (1981).

LICENSING BOARDS: DISCRETION IN MANAGING PROCEEDINGS

The fact that a procedure for the conduct of initial cross-examination by means of prehearing examinations in the nature of depositions has not previously been implemented in NRC licensing hearings does not mean that the procedure is invalid. It is always within the discretion of a court or an administrative agency to relax or modify its procedural rules adopted for the orderly transaction of business before it when in a given case the ends of justice require it. Such an exercise of discretion is not reviewable except upon a showing of substantial prejudice to the complaining party. *American Farm Lines* v. *Black Ball Freight Service*, 397 U.S. 532, 538-539 (1970).

LICENSING BOARDS: DISCRETION IN MANAGING PROCEEEDINGS

While use of innovative procedures might be appropriate in highly litigated cases involving sophisticated intervenors represented by a number of competent counsel to expedite those proceedings, the use of the same procedures in a case involving a *pro se* intervenor unfamiliar with adjudicatory procedures might be fundamentally unfair. Which procedural devices ought to be used in a particular proceeding is a decision best committed to the sound discretion of a licensing board as a part of its general duty to regulate the course of the hearing and the conduct of the participants. *See* 10 CFR §2.718(e); 5 USC §556(c)(7).

MEMORANDUM AND ORDER

RULING ON LICENSING BOARD AUTHORITY TO DIRECT THAT INITIAL EXAMINATION OF THE PRE-FILED TESTIMONY BE CONDUCTED BY MEANS OF PREHEARING EXAMINATIONS

I. BACKGROUND

On October 29, 1982, this Board, presiding over the Shoreham operating license proceeding, noted that it was considering ordering that the parties conduct cross-examination, redirect and recross-examination with respect to the Phase I emergency planning contentions initially by means of public prehearing depositions. Tr. 12,541-43. We proposed that these sessions be conducted as if the parties were examining on the prefiled direct testimony at the hearing, except that the Board would not be present.

The transcripts of the prehearing examinations subsequently would be filed with the Board, with the portions which each party seeks to move into evidence noted thereon. The Board would then resolve any procedural or evidentiary objections noted therein (and pursued at the time of filing the depositions), would rule on the admissibility of the noted portions into evidence after their adoption by the witnesses at hearing, and would preside over any follow-up questioning by the parties and the Board. *Id.* Portions of the prehearing examinations would thus become a part of the evidentiary record of this proceeding upon which this Board will base its initial decision. Therefore, in the end, the parties would be able to compile the same record utilizing many fewer days of Board hearing time.

The Board's purpose in proposing this procedure is to enable it to meet several obligations to the parties in this proceeding simultaneously. The Board's primary considerations are to protect the rights and interests of all the parties and to allow the exploration of all issues thoroughly, including through the important device of examination of witnesses. At the same time, the Board has an obligation to see that the hearing proceeds efficiently and substantively.

As the transcript from the current Shoreham proceedings demonstrates, Suffolk County (the County), as the lead intervenor, is exercising its right to examine fully and broadly, with substantial diligence. Such examination necessarily stimulates full examination by the other parties both through their redirect and through their cross-examination of opposing witnesses. In the quest for comprehensiveness, lines of questioning may be pursued with varying degrees of success in uncovering substantive facts. It is the Board's obligation to give close and careful attention to the substantive facts that are uncovered.

With these obligations in mind, we note that the County has not exercised its opportunity to file direct testimony in the upcoming hearings for certain of the Phase I Emergency Planning contentions. We also note that as demonstrated by the County with respect to the safety contentions (including the many on which it has filed testimony), full and broad examination on all contentions may be anticipated. Thus, the Board believes that the County may wish to develop its views through the cross-examination of witnesses both in lieu of and in addition to providing its own direct testimony.

The addition of the examinations before hearing to the proceedings is not put forth as a substitute for the Board's attention to those matters. It is a means to aid the parties and the Board to follow up the examination of witnesses before the Board in a probative and efficient manner. It is the Board's intention that these prehearing examinations will be the mechanism to give the parties the ability to more fully probe the areas of their concern while utilizing significantly less hearing time. Unless all parties and the Board agree otherwise, each witness will appear before the Board to orally attest to the truth of both his written prefiled direct testimony and those portions of his examination during depositions that the Board has decided to admit into evidence.

It is anticipated that both the parties' and the Board's questioning at hearing will be much better focused on the matters in controversy as a result of these prehearing examinations. The issues should be more thoroughly, yet efficiently, probed than they might have otherwise been. The result, we believe, will be beneficial to all parties, to the Board and to the public interest.

In its November 1, 1982 "Response to Board Request for Parties Views on Scheduling Matters," at 5, Suffolk County said that it "vigorously objects" to the Board's proposal, stating that it did not believe that depositions, such as those proposed by the Board, were an appropriate alternative to actual examination of witnesses before this panel, and asserting without explanation that the Board's proposal "is improper and inconsistent" with Section 189 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2239(a).

At hearing the following day, Counsel for the County adopted essentially the same position, without further elaboration. Tr. 12,564. In response to the County's request for an opportunity to brief this subject (Tr. 12,566), the Board suggested that all parties submit their views on the Board's proposal by November 8, 1982, with any replies to be served on November 15. Tr. 12,566. One of the Counsel for Suffolk County requested a lengthier time frame, owing to his other commitments. Accordingly, the Board adjusted its originally proposed deadlines to November 12 and 18, respectively. Tr. 12,585.

After having secured the Board's consent to extend the due date for filings from parties until November 12, the County filed with the Board on November 8, 1982 a "Response to Licensing Board Proposal of November 2, 1982" which did little more than restate the initial position taken by Suffolk County in its November 1 scheduling filing. The November 8 filing strongly asserts, with no supporting analysis and almost no explication, that the Board's proposal to require that initial cross-examination, redirect and recross be done by prehearing examination is "unlawful." The only explanation offered by the County for this stark characterization is its view that the proposed procedure violates Section 189 of the Atomic Energy Act, because that statute has consistently been implemented by the NRC "to require adjudication of evidentiary disputes in *public hearings* before the Commission or the Boards to which it has delegated its authority" (emphasis in original).

In the view of the County, the Board's proposal "is at odds with the norm and practice of NRC licensing proceedings" and the Board "has no authority in this proceeding to depart from the settled adjudicatory practice of the NRC," absent a change in the Commission's rules or a congressional amendment to the Commission's empowering legislation.

The Board had requested (Tr. 12,582), that the County discuss why the evidentiary use of such examination by deposition would be impermissible in NRC practice, in light of the provision in the Commission's rules, 10 CFR §2.743(b), requiring that parties submit the direct testimony of witnesses in written form. In its filing of November 8, the County notes only that the prefiled direct testimony is useful in preparation for a hearing and is explicitly authorized by the Commission's regulations. The County does not discuss or allege *how* the procedure proposed by the Board would violate the APA, Atomic Energy Act or NRC regulations, or that it would in any way prejudice the County's rights.

On November 11, 1982, the Board received the Long Island Lighting Company's (LILCO's) "Memorandum on the Use of Depositions to Increase Hearing Efficiency," which concludes that the procedure which the Board has proposed is proper under both the APA and the Commission's regulations. LILCO states that under the APA, submission of all evidence in an "on the record" hearing may be done in written form in the proper circumstances, 5 U.S.C. §556(d); it notes that this is effectively the procedure used in an NRC proceeding pursuant to §2.760(b), wherein the Commission, if required by the public interest, may direct that the Licensing Board certify the record to it without an initial decision and prepare its own initial decision.

Furthermore, LILCO asserts that the use of the procedure which the Board has proposed is an appropriate means of expediting what it describes as "very likely . . . one of the most complex cases in this country's administrative history." LILCO states its belief that the hearings to be held under the Board's proposed procedure will meet the "public" aspect of the NRC hearing requirement, and concludes that no party will be prejudiced by this procedure, since the scope of their examination will not be varied, only the form in which it will be presented initially to the Board.

The NRC Staff filed its "Position on the Board's Proposed Deposition Procedures" on November 12, 1982, which concludes that the Board does have the authority under the APA, the Atomic Energy Act and the Commission's rules to direct the parties to conduct their cross-examination through deposition-like prehearing examinations. The Staff further concludes that there would be no hearsay problem in the admission of portions of these prehearing examinations into evidence, both in that strict rules of evidence do not apply in administrative proceedings, and in that the declarants of this examination will be present at the hearings before the Board so as to permit the parties to establish the reliability of those portions of the prehearing examinations admitted into evidence.

The Staff also asserts that the use of the procedures proposed by the Board will not deprive any party of its rights to a full and fair hearing, since each of the parties will have the opportunity to present evidence, to conduct thorough cross-examination, and to make arguments. Furthermore, it states that the admission of depositions into evidence "does not constitute a substitute for the hearing, but rather a means to facilitate and focus that hearing." In this regard, the Staff analogizes the procedure proposed by the Board to 10 CFR §2.743(b), which requires the pre-filing of written direct testimony for these very purposes.

In the filing received on November 18, 1982 from the Shoreham Opponents Coalition, SOC asserts that while the Board's proposed prehearing examinations are stated to have been contemplated for the purposes of efficiency, it believes that the efficiency to be served by this procedure is the Board's own convenience and is unrelated to serving the interests of justice and a fair hearing process. It argues that the Board's proposal will violate long-standing administrative law public hearing requirements and will "create more problems, confusion and public skepticism about the licensing process than the Board will save in time through the use of evidentiary depositions." Furthermore, SOC asserts that the procedure proposed by the Board will deny the Board an opportunity to properly assess the demeanor of witnesses.

In a filing received on November 19, 1982, the North Shore Coalition (NSC) alleges that the Board's proposal would deny NSC procedural and substantive due process, in that it would permit a hearing to be held in the absence of a hearing officer. Additionally, NSC asserts that the Board's proposal violates the APA, in that it amounts to an amendment to the Commission's procedural rules without a rulemaking proceeding. NSC also contends that the costs attendant to implementing the procedure proposed by the Board will effectively deprive NSC of the opportunity to properly litigate its contentions.[1]

II. THE LICENSING BOARD'S AUTHORITY

The intervenors' objections to conducting initial examination of the witnesses in the manner which we have proposed appears to be predicated upon its interpretation of Section 189(a) of the Atomic Energy Act as requiring formal trial-type adjudicatory procedures, including oral examination before the Board, in all NRC licensing proceedings. While we acknowledge that the procedure which we have proposed apparently is an innovation in NRC practice, we believe it to be fully consistent with the requirements of the Atomic Energy Act, the Administrative Procedure Act (APA) and the Commission's regulations.

We note at the outset that the Atomic Energy Act does not itself specify the nature of the hearings required to be held pursuant to Section 189(a) of the Act:

> In any proceeding . . . for the granting . . . of any license or construction permit . . . and in any proceeding for the issuance or modification of rules and regulations dealing with the activities of licensees . . . the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding. . . .

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[1] The matter of costs is not addressed in this memorandum, but will be discussed on the record at the conference to be held in Suffolk County on November 23, 1982.

This is why the County's bare assertion that Section 189 precludes our use of initial questioning by prehearing examination fails to rise to the level of legal analysis or supporting argument; further examination of relevant statutes and precedent is necessary to determine what kind of hearing is required by Section 189.

By virtue of Section 181 of the Atomic Energy Act, 42 U.S.C. §2231, "the provisions of the Administrative Procedure Act . . . shall apply to all agency action taken under this Act." However, pursuant to Section 5(a) of the Administrative Procedure Act, 5 U.S.C. §544(a), the statute which describes when a formal adjudicatory hearing is required to be held under the APA, no adjudication is necessary in a case unless otherwise required by some different statute. Put another way,

> It will be noted that the formal procedural requirements of the Act are invoked only where agency action "on the record after opportunity for an agency hearing" is required by some other *statute*. The legislative history makes clear that the word "statute" was used deliberately so as to make sections 5, 7 and 8 applicable only where the Congress has otherwise *specifically* required a hearing to be held (citations omitted, emphasis in original).

U.S. Department of Justice, *Attorney General's Manual on the Administrative Procedure Act*, at 41 (1947). In the view of the Attorney General's Manual, "Licensing proceedings constitute adjudication by definition, and where they are required by statute to be determined on the record after opportunity for an agency hearing, sections 5, 7 and 8 (of the APA, requiring use of formal adjudicatory procedures) are applicable." *Id.* at 41.

While Section 189(a) does not, in its reference to "a hearing," distinguish between adjudication and rulemaking or explicitly state whether either must be conducted through formal "on the record" proceedings,

> [t]he Commission has . . . invariably distinguished between the two, and has provided formal hearings in licensing cases, as contrasted with informal hearings in rulemaking proceedings confined to written submissions and non-record interviews.

Siegel v. *Atomic Energy Commission*, 400 F.2d 778, 785 (D.C. Cir. 1968); *see also Citizens for a Safe Environment* v. *Atomic Energy Commission*, 489 F.2d 1018, 1021 (3d Cir. 1974) (AEC considers a licensing proceeding to be an adjudication).

Our determination that the APA and NRC precedent have provided for formal hearings in licensing cases does not, however, lead to the conclusion that it is improper to require that initial examination on the prefiled testimony be done in advance of the hearing before the Board. In accordance with Section 7(c) of the APA, 5 U.S.C. §556(d), a party to an administrative adjudicatory hearing does not have an unlimited right to cross-examine witnesses, but is instead entitled only "to conduct such cross-examination as may be required for a full and true disclosure of the facts." Furthermore, as was noted by LILCO, Section 7(c) also provides that:

> In rulemaking or determining claims for money or benefits or *applications for initial licenses* an agency may, when a party will not be prejudiced thereby, adopt procedures for the submission of all or part of the evidence in written form (emphasis added).

As contemplated by the Board, the selected portions of the transcripts of the cross-examinations, redirect examinations, and follow-up questions of all parties would be offered into evidence at the hearing before the Board. If admitted, they would then become a formal part of the decisional record of this proceeding. The Board and the parties would then be able to ask follow-up questions of the witnesses at the hearing before the Board. We believe this procedure to be closely analogous to the use of prefiled direct testimony, which, as just noted, is permitted under the APA, the rules of the Commission, 10 CFR §2.743(b), as well as under the rules of numerous other Federal agencies. Furthermore, we are unaware of any assertion by the County or any other party that they would be prejudiced by the Board's use of the procedure which it has proposed other than the complaint that the Board would not be present at the prehearing examinations.

The use of prehearing examinations will prevent the Board from observing the demeanor of the witnesses at the time of the initial examination. However, each witness panel will be made available for additional questioning before the Board, should the Board or the parties so desire. Therefore, the Board anticipates it will have sufficient opportunity to observe the witnesses' demeanor.

Additionally, while we know of no agency which has specifically authorized or required the use of cross-examination in written form in its hearings by rule, we note that the Interstate Commerce Commission has long made use of a "modified procedure" which requires that all evidence be submitted in the form of verified or sworn statements; an oral hearing and cross-examination are not permitted unless material facts are in dispute *and* the sworn statements do not provide an adequate basis for their resolution.[2] Furthermore, we take official notice that the U.S. Postal Rate Commission has been regularly using compulsory written cross-examination in the form of interrogatories, with additional follow-up oral cross-examination at the hearings in their rate cases.[3]

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[2] This procedure has been upheld under challenge in Federal Courts. *Crete Carrier Corp.* v. *United States*, 577 F.2d 49, 50 (8th Cir. 1978); *Boat Transit, Inc.* v. *United States*, 1970 Federal Carrier Cases, §82, 215 (E.D. Mich. 1970), *aff'd*, 401 U.S. 928 (1971).

[3] LILCO also cites an administrative case, *American Fruit Purveyors, Inc.*, 30 Ad. L. 2d 584 (Pike and Fisher) (1971) which supports the Board's proposal to require pre-hearing examination by oral deposition questions. That case involved the use of depositions on written questions as evidence-in-chief pursuant to Department of Agriculture rules where the witnesses were in excess of 100 miles from the place of hearing; the respondent in that case had been offered the chance to file cross-questions of these witnesses, but declined to do so because of the expense. The witnesses did not appear at the

(Continued)

In *Permian Basin Area Rate Cases*, 29 FPC 588 (1963), the hearing examiner directed that a substantial part of the cross-examination of a witness be done by deposition. In refusing interlocutory review, the Federal Power Commission stated:

> We are confident that the presiding examiner's ruling reflects an attempt to govern a massive proceeding fairly and expeditiously. Without expressing any opinion as to the appropriateness of the procedure generally, an isolated instance where the cross-examination of a particular witness has been ordered to be completed by "deposition" generally would not, in itself, constitute the extraordinary circumstances referred to in our Rules.[4]

In *American Public Gas Association* v. *FPC*, 498 F.2d 718, 723 (D.C. Cir. 1974), petitioners alleged they had been denied their right to cross-examine in a Federal Power Commission decision which had limited the parties' cross-examination to written interrogatories, without any follow-up before the presiding finder of fact. In rejecting this position, the D.C. Circuit stated:

> Even in a formal adjudicatory hearing under the APA, however, cross-examination is not always a right. . . . Although the petitioners claim that cross-examination of live witnesses was necessary they do not point to any specific weakness in the proof which might have been explored or developed more fully by that technique than by the procedures adopted by the Commission. . . . We are told in general that the issues of costs, gas supply and rate of return might have been explored, but the petitioners do not suggest what questions were necessary for this purpose, nor do they explain why their written submittals were ineffectual. In the circumstances we cannot say that the rights of the petitioners have been prejudiced. *See Long Island RR Co.* v. *United States*, 318 F.Supp. 490, 499 (E.D.N.Y. 1970). 498 F.2d at 723.

We believe that the Board's proposal for the conduct of cross-examination is even less intrusive into the cross-examination flexibility of parties than the interrogatory procedure approved by the D.C. Circuit in *American Public Gas*, because parties will be permitted to orally question these witnesses in the prehearing depositions, and readily follow up on any incomplete or evasive answer. In addition, the Board and the parties will have the opportunity to follow up with further questions at the hearing. Neither the County, nor other intervenors, has cited any reason why this procedure would prejudice its rights. We conclude that our proposed prehearing examination procedure clearly satisfies the provisions of the APA.

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hearing, respondent asserted it had been denied the opportunity to conduct cross-examination. The Commission rejected this argument, on the basis that respondent had received an opportunity to cross-examine these witnesses but had waived this right by not filing cross-questions. *See* 7 CFR §47.16(f) regarding use of depositions in Department of Agriculture proceedings.

[4] The full case on the merits was decided by the Commission at 34 FPC 159 (1965), *aff'd*. 390 U.S. 747 (1968) without express discussion of this point.

We further believe that this Board has the authority, under NRC rules, to direct that the parties conduct initial examination by means of prehearing examinations. Pursuant to 10 CFR §2.718, this Board has the power to regulate the course of the hearing and the conduct of the participants, as well as to "[t]ake any other action consistent with the Act, this chapter, and sections 551-558 of title 5 of the United States Code [the APA]." *See also* 5 U.S.C. §556(c).

As is stated in Appendix A to 10 CFR Part 2, at V:

> The board should use its powers under §§2.718 and 2.757 to assure that the hearing is focused upon the matters in controversy among the parties and that the hearing process for the resolution of controverted matters is conducted as expeditiously as possible, consistent with the development of an adequate decisional record.

This guidance was echoed last year in the Commission's *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 453 (1981):

> Individual adjudicatory boards are encouraged to expedite the hearing process by using those management methods already contained in Part 2 of the Commission's Rules and Regulations. The Commission wishes to emphasize though that, in expediting the hearings, the board should ensure that the hearings are fair, and produce a record which leads to high quality decisions that adequately protect the public health and safety and the environment.

Accordingly, as LILCO noted, for the purposes of focusing and expediting the hearing process, this Board may, under §2.718(d), "[o]rder depositions to be taken"; under §2.718(e), "[r]egulate the course of the hearing and the conduct of the participants"; under §2.756, employ "informal procedures"; under §2.757(c), "[t]ake necessary and proper measures to prevent . . . repetitious, or cumulative cross-examination"; and under §2.767(d), "[i]mpose such time limitations on arguments as [it] determines appropriate, having regard for the volume of the evidence and the importance and complexity of the issues involved."

The Board's procedures are fully consistent with the requirement of 10 CFR §2.743(a), which grants parties the "right to . . . conduct such cross-examination as may be required for full and true disclosure of the facts." The fact that the procedure which we are ordering has not previously been implemented in NRC licensing hearings does not mean that the procedure is invalid. As the Supreme Court stated in *American Farm Lines* v. *Black Ball Freight Service*, 397 U.S. 532, 538-539 (1970), upholding an Interstate Commerce Commission decision granting a motor carrier temporary operating authority in circumstances not technically in compliance with ICC regulations:

> The Commission is entitled to a measure of discretion in administering its own procedural rules in such a manner as it deems necessary to resolve quickly and correctly urgent transportation problems. . . . [T]here is no reason to exempt this case from the general principle that "[i]t is always

> within the discretion of a court or an administrative agency to relax or modify its procedural rules adopted for the orderly transaction of business before it when in a given case the ends of justice require it. The action of either in such a case is not reviewable except upon a showing of substantial prejudice to the complaining party." *NLRB* v. *Monsanto Chemical Co.*, 205 F.2d 763, 764. And *see NLRB* v. *Grace Co.*, 184 F.2d 126, 129; *Sun Oil Co.* v. *FPC*, 256 F.2d 233; *McKenna* v. *Seaton*, 104 U.S. App. D.C. 50, 259 F.2d 780.

We believe this operating license proceeding to clearly be a case in which the approach suggested by the Board to better focus cross-examination is warranted. The extraordinary breadth of this proceeding was discussed in LILCO's November 11 filing at 2-3:

> The Board made the remarks just quoted on November 2nd — the 61st day of hearings in this proceeding. The Transcript had then passed 12,500 pages. Over 100 exhibits had then been marked and/or received into evidence. Almost 7,000 pages of written direct testimony had then been served.[1] Eighty-seven witnesses had already testified or were then on the stand.[2]
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> [1] The page totals include the testimony itself, attachments to it, and witnesses' qualifications. Some of this written testimony has become the predicate for settlement negotiations rather than hearings.
>
> [2] The witnesses totals include each witness who testified on each contention. Thus, if a person testified on more than one contention, he has been counted more than once. In addition to witnesses at the hearings, 33 people have been deposed to date in this case.

Furthermore, as LILCO also notes, there still remain at this time a number of health and safety contentions to be litigated prior to the time when the Board will begin to hear Phase I Emergency Planning Contentions, while the time and energies to be devoted to Phase II Emergency Planning contentions still cannot be estimated. As LILCO also observes, the *Manual for Administrative Law Judges* (revised ed. 1982) defines a complex case as follows:

> Complex cases require hearings lasting from a few days to a month or more, have many parties and many issues, and involve few credibility questions. Typically, much of the testimony is highly technical and lengthy, and is submitted in written form prior to the hearings.

By this definition, Shoreham is indeed a most complex case.

Based on the experience which we have gained in these past six months through working with the parties to the present litigation, all of whom are represented by very competent counsel, we are aware that they have developed an impressive track record for an NRC proceeding in the number of contentions which they have been able to settle without litigation. Their record in focusing their cross-examination, or even reaching stipulations as to factual matters encompassed in the contentions which we would have thought incontrovertible, has not been quite so impressive.

In our view, requiring prehearing examinations on Phase I emergency planning contentions will greatly aid the parties' questioning before the Board in that they will be able to test many lines of questioning during the prehearing examinations, and then follow up before the Board on those matters they deem most significant with greater incisiveness than might otherwise have been possible.

In reaching our conclusion that it is permissible under the Atomic Energy Act, the APA and the Commission's regulations for this Board to direct that the parties conduct their initial cross-examination, redirect and recross-examination by prehearing examination in the nature of a deposition, we wish to emphasize that we cannot and do not reach the question of whether the adoption of such a procedure would be proper or advisable in other NRC proceedings. The proceeding before us is an exceptional case in many ways, and what might be an appropriate procedure to expedite a lengthy, highly litigated case involving sophisticated intervenors represented by a number of competent counsel might be fundamentally unfair in a case involving a *pro se* intervenor unfamiliar with both depositions and adjudicatory procedures.[5]

Furthermore, in light of the long-standing interpretation which has been given to the nature of the hearing required by the Atomic Energy Act, first by the Atomic Energy Commission, *Siegel* v. *AEC*, *supra*, and then subsequently in NRC proceedings, we need not and do not express a view on whether an amendment to the Commission's regulation *requiring* such a procedure in all NRC adjudications would be proper, absent prior Congressional action authorizing such a change.[6]

In our view, the decision whether to require that initial examination be conducted by an appropriate form of prehearing examination is one best committed to the sound discretion of a licensing board as part of its general duty to regulate the course of the hearing and the conduct of the participants. *See* 5 U.S.C. §556(c)(7); 10 CFR §2.718(e). This is consistent with the general case management powers committed to a board under 10 CFR §2.718, which requires it "to conduct a fair and impartial hearing according to law, to take appropriate action to avoid delay and to maintain order," and would ensure that this decision is made by those persons most familiar with the parties, the issues, the scheduling demands and the equities of any particular proceeding. *See [Commission] Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 453 (1981).

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[5] As the Supreme Court has stated in a non-APA context, "The opportunity to be heard must be tailored to the capacities and circumstances of those who are to be heard." *Goldberg* v. *Kelly*, 397 U.S. 254, 269 (1970). We believe similar concerns must be addressed in an agency's implementation of the APA. See *Swift and Company* v. *United States*, 308 F.2d 849, 851 (7th Cir. 1962). "Due process in an administrative hearing, of course includes a fair trial, conducted in accordance with fundamental principles of fair play and applicable procedural standards established by law."

[6] *See State Farm Mutual Automobile Insurance Co.* v. *Department of Transportation*, 680 F.2d 206, 229 (D.C. Cir. 1982), holding that the National Highway and Transportation Safety Administration had acted arbitrarily in rescinding its "Modified Airbags and Motor Vehicle Safety Standard 208" without stating "clear and convincing reasons" for altering what had been a "consistent administrative interpretation of a statute shown clearly to have been brought to the attention of Congress and not changed by it. . . ."

III. PROCEDURE FOR PREHEARING EXAMINATION

As we have concluded, based upon our examination of relevant statutes, regulations and judicial and administrative precedent, that this Board does possess the requisite authority to direct that initial examination of the prefiled testimony be had through prehearing examination in the nature of a deposition, we are directing that such examinations be held pursuant to the procedure set forth below. Implementation of this order will be discussed at a conference of parties to be held in Suffolk County on November 23, 1982. Therefore, it is hereby

ORDERED

that prehearing examination be conducted as follows:

A. Commencing on or about November 29, 1982 and continuing on a schedule to be set by the Board in consultation with the parties during the November 23, 1982 conference, the parties are directed to conduct cross-examination, redirect, recross and any further follow-up questions as time may permit, on all prefiled direct testimony, not stricken or otherwise disposed of by Board rulings, which relate to those of "Intervenors' Consolidated Phase I Emergency Planning Contentions" as have not been otherwise resolved among the parties.

B. The prehearing examinations shall be open to the public and shall be held in a mutually agreeable location in Suffolk County, New York. The parties shall be jointly responsible for arranging for such facilities, including such security arrangements as are deemed advisable. In the event of any disturbance which disrupts examination to the extent that it is unreasonable to continue, the disrupted examination shall be adjourned and shall be reconvened when order has been restored. Should it prove impossible or unreasonable to publicly reconvene the examination, the remainder of those examinations scheduled for that day shall be resumed as promptly as possible in a prearranged location not subject to disruption. The Board shall be informed of this circumstance as soon as practicable.[7]

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[7] Compare 10 CFR §2.751, under which all NRC hearings unrelated to restricted data, defense information or safeguards information are required to be public, "unless otherwise ordered by the Commission." As the body delegated the authority by the Commission to conduct this proceeding, this Board would have the authority to order that the prehearing examinations not be open to the public, should the integrity of the proceeding and the safety of the participants be threatened. *See* 10 CFR §2.4(e).

C. Prehearing examinations shall generally be conducted in the nature of a deposition, *e.g.*, evidentiary and procedural objections shall be noted on the record, without argumentation, and the witness(es) shall thereafter be instructed to answer the disputed question. Witnesses shall testify under oath or affirmation. Exhibits used during the course of prehearing examinations shall be marked for identification and bound into the transcript of such examination if practical; copies of any exhibits too large to bind into the transcript itself shall be served upon the Board and parties participating in the examination, or identified as having been served previously.

D. Should any party believe a question or line of questioning to be so inappropriate as to entitle it to move for a protective order, within the scope of those situations enumerated in *Cincinnati Gas & Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit1), LBP-82-47, 15 NRC 1538, 1545-46 (1982), it shall be the duty of such party to so note on the record prior to instructing its witness not to answer. The party must then seek a protective order and shall be required to notify the Board and parties prior to the close of business on that day and arrange for a telephone conference call to be held at 8:15 am on the next business day, so that the Board may rule promptly on such objections. It is not anticipated that any party will instruct a witness not to answer a question except in those extraordinary circumstances where a protective order would be justifiable. Once a party announces its intention to seek a protective order, however, the examination shall continue to the extent possible on other matters relevant to the contention.

E. The time estimates prepared by each party for its cross-examination on Phase I Emergency Planning issues, as they may be modified at the November 23, 1982 conference, shall be used as general guidance for the parties for joint determinations as to how long should be allocated to cross-examination, redirect and recross. While these estimates are not to be treated as absolute requirements, the parties should take care to allow time for adequate coverage of each contention within this estimate.

F. The parties will subsequently jointly file the prehearing examination transcripts with the Board, with the portions which each party seeks to move into evidence noted thereon. The Board will thereafter rule on any procedural or evidentiary objections noted therein and pursued at the time of the filing of the transcripts. The scheduling for submission of these filings will be established at the November 23, 1982 conference.

G. At the time of the evidentiary hearings before the Board on Phase I Emergency Planning contentions, unless otherwise waived by all parties which participated in the deposition and the Board, each witness will appear before the Board. The parties would then ask their witnesses whether they adopt their prefiled written direct testimony and those portions of their prehearing examination remaining after the board has resolved objections.

H. The Board will orally question the witnesses based upon both their written direct testimony and the transcript of their examinations. The parties will thereafter be permitted to question the witnesses orally before the Board regarding either matters raised by the Board's questions or any other matters material and relevant to the contentions. As the Board will have already read the prehearing examination transcripts, it is anticipated that any questions asked, which the parties previously had asked during their examination of these witnesses, will be intended primarily for the purpose of providing necessary context and foundation for well-focused follow-up questions. Within its powers to limit the introduction of cumulative evidence, the Board will consider the imposition of time limits on any party whose oral questions before the Board warrant such a limitation.

I. Any party which chooses to default on the obligations imposed by this order and to not take part in the prehearing examinations will be deemed to have waived its right to conduct cross-examination. Similarly, as the Board intends that the prehearing examinations serve as the principal forum for cross-examination, redirect and recross on these contentions, any party which does not pursue its obligations in good faith may be held to have waived its right to ask follow-up questions before the Board. Any party which refuses to produce any of its witnesses for the prehearing examinations will be deemed to have abandoned its right to present the subject witness and testimony. Depending on the extent of any default, the total result could be an effective abandonment of the issue in controversy.

IT IS SO ORDERED.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Dr. Peter A. Morris
ADMINISTRATIVE JUDGE

Dr. James H. Carpenter
ADMINISTRATIVE JUDGE

Bethesda, Maryland,
November 19, 1982.

Directors' Decisions Under 10 CFR 2.206

DIRECTORS' DECISIONS

1684

Cite as 16 NRC 1685 (1982) DD-82-12

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

Richard C. DeYoung, Director

In the Matter of	**Docket No. 50-247**
CONSOLIDATED EDISON COMPANY (Indian Point Unit No. 2)	
POWER AUTHORITY OF THE STATE OF NEW YORK (Indian Point Unit No. 3)	**Docket No. 50-286 (10 CFR 2.206) November 26, 1982**

The Director of the Office of Inspection and Enforcement denies a petition filed by the Union of Concerned Scientists and the New York Public Interest Research Group which requested immediate suspension of operation of Indian Point Units 2 and 3 on the basis of inadequate State and local planning and preparedness for radiological emergencies.

EMERGENCY PLANNING

In the absence of compelling circumstances requiring such action, licensees are generally permitted 4 months to secure corrective action for emergency planning and preparedness deficiencies before the NRC takes enforcement action for such deficiencies.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

On August 4, 1982, the Union of Concerned Scientists and the New York Public Interest Research Group asked that the Commission immediately suspend operation of Indian Point Units 2 and 3. The petitioners base their request on the interim findings of the Federal Emergency Management Agency (FEMA) regarding the adequacy of radiological emergency preparedness of State and local governments for the Indian Point Station.[1] The Commission has referred the petitioners' request to the Staff for appropriate action in accordance with 10 CFR 2.206 of the Commission's regulations.

Before the petitioners submitted their request to the Commission, the Regional Administrator of NRC Region I had formally notified the Indian Point licensees on August 3, 1982, pursuant to 10 CFR 50.54(s)(2)(ii), that the deficiencies identified by FEMA must be remedied within 120 days or the NRC would determine whether suspension of operation or other enforcement action should be taken. The Commission received briefings on FEMA's findings and the progress being made towards resolution of the deficiencies on September 9, October 21, and November 19, 1982.

The petitioners believe that permitting any further operation of the Indian Point plants before the deficiencies identified by the recent FEMA interim findings are corrected poses an unreasonable risk to public health and safety. The petitioners argue that the deficiencies are essentially the same as those identified in earlier reviews of the emergency response plans and the deficiencies are unlikely to be corrected within 120 days. In view of the deficiencies and because it is asserted that the population density outside the 10-mile emergency planning zone allows little confidence that *ad hoc* actions outside this zone could be carried out, the petitioners believe immediate suspension of operation is necessary. Petitioners assert that during the previous "120-day clock," started in April 1981, nothing of substance happened.

For the reasons stated in this decision, the Staff does not agree that an order immediately suspending operation is required. Therefore, the petitioners' request is denied.

The NRC had previously, in April 1981, sent letters to affected licensees with respect to offsite preparedness around Indian Point and the other operating nuclear power plant sites in New York State (Ginna, Nine Mile Point, and FitzPatrick). The action was initiated based on memoranda sent to the NRC from FEMA headquarters which characterized and transmitted a FEMA Region evaluation of the New York State and County emergency plans.[2] The NRC letters to New York State nuclear power plant operators indicated that, although the assessment of the overall state of emergency preparedness had not been completed, the NRC was of the view that a number of the deficiencies identified by FEMA needed to be removed in order for the NRC to conclude that "appropriate protective measures can and will be taken in the event of a radiological emergency at your facility." The FEMA letter which NRC transmitted to New York State nuclear power plant operators stated that the Statewide Radiological Emergency Preparedness Plan was deficient in three broad respects, most important of which was the "conflict between State and county authorities and responsibilities pertaining to radiological emergency preparedness." This deficiency was said to "pervade" the plan, and unless resolved, the plan would remain deficient, even if all other planning standards were adequately addressed. In addition, the letter stated that the plan needed greater specificity in a number of areas, and that certain planning criteria had yet to be addressed.

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[1] *See* Letter from L. M. Thomas, FEMA, to W. Dircks, Executive Director for Operations, NRC (August 2, 1982), enclosing Memorandum for L. M. Thomas from Frank P. Petrone, Regional Director, FEMA Region II, and accompanying report "Interim Findings on the Adequacy of Radiological Emergency Response Preparation of State and Local Governments at the Indian Point Nuclear Power Station" (July 30, 1982).

[2] Memoranda dated April 2, 1981 and April 23, 1981 from John E. Dickey, FEMA, to Brian Grimes, NRC; letter dated April 6, 1981 from Vincent Forde, FEMA Region to William C. Hennessey, State of New York.

At the end of four months following April 1981, the principal identified issue, that of the jurisdiction of State and county governments during an emergency, had been resolved by State legislation. FEMA provided a finding dated August 19, 1981 that the state of preparedness was generally adequate. FEMA noted at that time that it had now received a plan submitted for the Indian Point area (the earlier letters were based on a review of draft plans). FEMA also stated that a final determination on the adequacy of preparedness could not be made until an exercise had been observed at each site.

In December 1981, the FEMA Regional Assistance Committee (RAC) transmitted its comments, dated July 1981, on the New York State Radiological Emergency Preparedness Plan to the Chairman, New York State Disaster Preparedness Commission. The December 1981 letter from FEMA to New York State also included the RAC comments on New York State County Radiological Emergency Preparedness Plans. The December 1981 FEMA transmittal letter did not identify significant deficiencies among the RAC comments.

On August 2, 1982, FEMA transmitted to NRC a report of its interim findings on the adequacy of radiological emergency response preparations of State and local governments at the Indian Point Nuclear Power Station. FEMA's report states that the findings were based upon the site-specific RAC review and also upon a post-exercise assessment using the criteria of NUREG-0654/FEMA-REP-1, Rev. 1 of the full-scale exercise conducted at Indian Point on March 3, 1982 that involved participation of State, county, and plant personnel. NUREG-0654 criteria address the planning standards for emergency preparedness that have been adopted in 10 CFR 50.47(b) of the Commission's regulations. The August 2, 1982 FEMA findings as a result of the detailed review of the plans and exercise assessment identified significant deficiencies with respect to five of the planning standards. Specific items were identified which cumulatively resulted in the significant deficiencies. On August 3, 1982, the NRC Regional Administrator for Region I transmitted to the Indian Point licensees, letters which described the significant deficiencies, and which notified the licensees that "should the significant deficiencies identified by FEMA in their August 2, 1982 letter not be remedied within 120 days of the date of this letter, the NRC will determine whether your reactor shall be shut down until such deficiencies are remedied or whether other enforcement action is appropriate."

The question of whether significant deficiencies in emergency preparedness pose an unreasonable risk to the public health and safety was addressed by the Commission when the emergency preparedness regulations were developed. For the reasons stated below, the Commission determined that immediate action against power plant licensees in the face of significant emergency preparedness deficiencies was not warranted. (A similar finding was made by the Commission when nuclear power plants were allowed to operate during the development and implementation of the rules relating to emergency preparedness.)

Although the Commission's regulations do not preclude taking action against a licensee in less than 120 days after the identification of significant deficiencies which cause a lack of reasonable assurance that protective measures can and will be taken in the event of a radiological emergency, the NRC has included in its regulations a 120-day period during which licensees may secure corrective actions to provide an adequate state of emergency preparedness even though significant deficiencies have been identified. This time period is generally allowed in recognition of the existence of extensive onsite measures to prevent and mitigate accidents, the relatively low likelihood of significant offsite releases, the cooperative effort required by licensees to achieve improvements in offsite preparedness over which they have no direct control, and the unnecessarily harsh economic and social consequences in the absence of other compelling reasons to State and local governments, utilities and the public of a decision to shut down immediately a nuclear power plant while corrections are made. These considerations apply with equal force to the Indian Point site. The Staff is not aware of information that could compel a different course of action from the 120-day period generally permitted under the regulations. Information has not been provided by the petitioners on which to base a shortening of this time period. After a 120-day period within which licensees have the opportunity to obtain the corrected deficiencies and reduce the impacts of plant shutdown, the NRC regulations contemplate consideration of and then a decision on enforcement action which takes into account whether any remaining deficiencies are significant for the plant in question, whether interim compensatory measures are in place or whether there are other compelling reasons to allow plant operation. These actions will occur after the 120-day period expires.

The petitioners argue that the deficiencies in the current "120-day clock" are essentially the same as those identified in earlier reviews. Aside from the authority question, which has been resolved by legislation, the NRC did not identify for the licensees specific deficiencies which were required to be removed, but rather referred to a list of FEMA deficiencies and indicated that the NRC was of the view that some were significant. (FEMA had at that point not identified significant deficiencies against the planning standards.) Specific items which cumulate to "significant" deficiencies against certain planning standards have now been identified for the licensees although some of these deficiencies are the same as those on the list provided with the first "120-day clock" letter. Enough progress has been made on the authority question and the other deficiencies for FEMA to make a finding of general adequacy at the end of the first 120-day period. Additional plan reviews and the March 1982 exercise at Indian Point allowed FEMA to focus its concerns and arrive at significant deficiencies with respect to the planning standards. On the basis of the above considerations, we conclude that no specific action against the licensees is warranted based solely on the commonality of deficiencies in the two "120-day clocks."

The petitioners' concern with respect to the effect of population densities on the ability to take *ad hoc* actions outside the 10-mile emergency planning zone is not warranted. Generally, the action to be taken outside the 10-mile zone would be a recommendation to the public for in-place sheltering (and in some cases later timely local relocations) at distances outside 10 miles rather than evacuation. Sheltering measures depend primarily on communications to the affected area and are not adversely influenced (and may be enhanced) by increased population densities. The quality of in-place shelter may be higher in high population density areas, and runoff provided by storm sewers may also aid in reducing exposures from any radioactive material deposited as a result of rainfall. Relocations may be somewhat slower from high population density areas should local relocations be required to minimize the health hazard from ground contamination in very low likelihood events. However, no information has been produced by petitioners to show that the net result of the above effects on risks is uniquely high at the Indian Point site or that the Commission's regulations which contemplated *ad hoc* actions beyond 10 miles at all sites, including Indian Point, were improperly drawn.

We conclude that substantial progress in emergency preparedness has been made at and around the Indian Point facilities, that sufficient information which would warrant shortening of the 120-day period or additional enforcement action at this time has not been produced by the petitioner, and that the petition should be denied. The Staff notes that FEMA's briefings of the Commission have indicated that substantial progress is being made in correcting the identified deficiencies. We note, too, that both Indian Point units have been shut down since the 120-day period began.

Although this decision denies the petitioners' request for an immediately effective order suspending operation of Indian Point Units 2 and 3, this decision does not preclude any future enforcement action by the Commission to ensure the adequacy of emergency planning. The Commission will examine the corrective action for the deficiencies in emergency preparedness following the 120-day period initiated by the Regional Administrator's letters of August 3, 1982, and determine whether enforcement action, including suspension of operation, is appropriate at that time.

A copy of this decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in 10 CFR 2.206(c), this decision will become final within 25 days of its issuance, unless the Commission determines on its own motion to review it within that time.

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland,
this 26th day of November 1982.

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NUREG-0750
Vol. 16, No. 6
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NUCLEAR REGULATORY COMMISSION ISSUANCES

December 1982

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NUCLEAR REGULATORY COMMISSION ISSUANCES

December 1982

This report includes the issuances received during the specified period from the Commission (CLI), the Atomic Safety and Licensing Appeal Boards (ALAB), the Atomic Safety and Licensing Boards (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions For Rulemaking (DPRM).

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

U.S. NUCLEAR REGULATORY COMMISSION

Prepared by the Division of Technical Information and Document Control,
Office of Administration, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555
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I

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B. Paul Cotter, Chairman, Atomic Safety and Licensing Board Panel

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VIII

Cite as 16 NRC 1691 (1982) CLI-82-37

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. STN 50-437-ML**

OFFSHORE POWER SYSTEMS
(Manufacturing License for
Floating Nuclear Power Plants) **December 6, 1982**

For reasons different than those set forth by the Appeal Board in ALAB-686, 16 NRC 454 (1982) and ALAB-689, 16 NRC 887 (1982), the Commission finds that the immediate effectiveness review provisions of 10 CFR §2.764(e) do not apply to manufacturing licenses. For this and other reasons, the Commission holds: (1) a licensing board decision authorizing the issuance of a manufacturing license can become effective before it becomes final agency action, and (2) neither the Appeal Board nor the Commission need undertake an immediate effectiveness review of such a decision.

MANUFACTURING LICENSE: EFFECTIVENESS PENDING REVIEW OF INITIAL DECISION

A licensing board decision on a manufacturing license can become effective pursuant to 10 CFR §2.764(a) pending final Appeal Board or Commission review of that decision.

MANUFACTURING LICENSE: IMMEDIATE EFFECTIVENESS REVIEW OF INITIAL DECISION (NEED FOR)

The issuance of a manufacturing license does not conclude the construction permit review process and therefore does not present health and safety issues requiring an immediate effectiveness review under 10 CFR §2.764(e) by the Appeal Board or Commission.

MEMORANDUM AND ORDER

In ALAB-686, 16 NRC 454 (1982), and ALAB-689, 16 NRC 887 (1982), the Atomic Safety and Licensing Appeal Board for this proceeding held that the Commission's effectiveness provisions in 10 CFR 2.764 do not apply to decisions on manufacturing licenses and that such decisions can become effective before the conclusion of the Appeal Board's *sua sponte* review even though they do not become final until the conclusion of such review. For the reasons discussed below, we find that immediate effectiveness review does not apply to manufacturing licenses but not for the reasons advanced by the Appeal Board.

First, we note that 10 CFR 2.764(a) applies to manufacturing licenses. Thus, it is unnecessary to discuss the Appeal Board's erroneous belief that an agency decision can become effective but not final in the absence of a provision separating these concepts. 10 CFR 2.504 provides in pertinent part:

> The provisions of Subparts A and G [of Section 2] relating to construction permits apply to manufacturing licenses subject to this subpart, with respect to matters of radiological health and safety, environmental protection, and the common defense and security . . .[1]

10 CFR 2.764(a) of Subpart G had long been part of the Commission's regulations when 10 CFR 2.504 was promulgated. Moreover, the subjects identified in 10 CFR 2.504 clearly relate to the spectrum of potential issues that would be relevant in any proceeding on whether an initial decision authorizing issuance of a manufacturing license should be effective pending review. Under these conditions, there can be no doubt that 10 CFR 2.764(a) was intended to apply to an initial decision authorizing issuance of a license for a manufacturing license. It is for this reason alone that a Licensing Board decision on a manufacturing license can become effective before it becomes final.

Second, we find that 10 CFR 2.764(e) does not apply to manufacturing licenses. That provision was promulgated after 10 CFR 2.504 and addressed some concerns

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[1] See also 10 CFR Part 50, Appendix M, paragraph 1.

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not presented by manufacturing licenses. In particular, as the Appeal Board noted, a manufacturing license authorizes only the manufacture of standardized facilities at industrial locations; permanent sites at which to place the plants for operation are not designated until the successful completion of the construction permit proceeding. Accordingly, because the issuance of a manufacturing license does not conclude the construction permit process, such a license does not present health and safety issues requiring immediate review. *Cf.* 46 *Fed. Reg.* 47764, 47765 (September 30, 1981) (deletion of Commission review of decisions authorizing fuel loading and low-power testing).

For these reasons we find that a manufacturing license can become effective before it becomes final and that neither the Appeal Board nor the Commission need undertake an immediate effectiveness review of a Licensing Board decision authorizing the issuance of a manufacturing license. Commissioners Gilinsky and Ahearne dissent from this decision. The separate views of Commissioners Gilinsky and Ahearne are attached.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 6th day of December, 1982.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

The Licensing Board decision before us authorizes the construction of eight barge-mounted nuclear power plants, between now and the end of the century, at a manufacturing facility in Florida. These plants would have small, relatively weak containments. The chief safety issue is whether these containments are strong enough to withstand the consequences of an accident.

By declining to consider this Board decision now, and thereby allowing it to go into effect without Commission review, the Commission is evading its responsibilities. Moreover, today's action is inconsistent with the Commission's policy of

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*Commissioner Gilinsky was not present when this Order was approved, but had previously indicated his disapproval.

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reviewing Licensing Board approvals of construction permits before construction is, in fact, permitted to begin.

The rationale offered by the Commission is that "because issuance of a manufacturing license does not conclude the construction permit process, such a license does not present health and safety issues requiring immediate review." What the Commission is saying is that after building the eight complete nuclear power plants, the manufacturer cannot tow them to their ultimate destinations, offshore or upriver along the Atlantic coast, without further review by the Commission. But, as a purely legal matter, the applicant could complete all eight plants prior to obtaining further Commission approval.

The Commission knows perfectly well that, once a large investment has been made, it is very difficult to require design changes even for important safety reasons. If the Commission finds it difficult to alter the floating power plant design now, it will find it well nigh impossible after the plants are built. It is precisely to avoid being locked into the wrong decision by subsequent investments that the Commission reviews Licensing Board construction permit approvals before they are made effective.

I am perfectly well aware that Offshore Power Systems is, in fact, unlikely to build such plants in the present circumstances and that this reduces the immediate practical significance of today's decision. But that is hardly a reason for the Commission to take the easy way out.

Taking the easy way out is precisely what got the Commission into a lot of trouble in the past. Until the Three Mile Island accident, the Nuclear Regulatory Commission continued the practice of its predecessor, the Atomic Energy Commission, of not reviewing decisions granting construction permits and operating licenses for large power plants before they went into effect. This meant that steel was put in place and concrete poured or that a power plant was started up and taken to full power without the basic decision ever having been passed on by the Commissioners. This was a convenient policy for the development-minded AEC since it denied both outsiders and individual Commissioners an opportunity to raise questions in a forum where they might get more public attention than they would otherwise get in a Licensing Board hearing. It also had the attraction of allowing Commissioners to avoid direct responsibility for decisions which might prove awkward if they had to be confronted head-on. It was not, however, a policy that was fitting for the newly-created, independent NRC whose chief responsibility was nuclear safety.

Nevertheless, during the early years of the NRC's history, the argument prevailed that the Commission should only take up Licensing Board decisions after they had passed through the hands of the Appeal Board. Only then would they be ready for the Commission. To step in earlier would be to muddy the legal waters. In fact, the Commission took very few appeals. And when it did, the review most often focused on obscure issues and came years after it could have made any real

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difference. So, for example, the Commission took up the question of the operation of the TMI-2 power plant after the plant was already operating, and busied itself examining the nearness of the plant to an airport, to the neglect of other questions which proved more important. (Although overtaken by events, the airport issue is still before the Commission.)

After the Three Mile Island accident, the Commission came under severe pressure to take direct responsibility for the agency's principal safety decisions. It did so reluctantly, first agreeing to review the decision of the Hearing Board in the Three Mile Island-1 restart case before that decision became effective and, later, agreeing to pass on other operating license and construction permit decisions before they went into effect. Some Commissioners, and certainly the industry affected by these decisions, hoped that this would be a temporary departure from the longstanding practice of letting lower board decisions become effective immediately. Ending the Commission's "effectiveness review" was high on the list of the demands made by industry groups after the initial shock of the Three Mile Island accident had worn off, when they were anxious to get back to the old way of doing business.[1]

But the Commissioners' review has proven difficult to drop as it has become a regular and expected feature of the Commission's process, fixed in regulation.

Unfortunately, because of an oversight, manufacturing licenses for nuclear power plants were not explicitly enumerated in the rule as being subject to immediate effectiveness review by the Commission. This is why the Commission must decide whether it will review the Licensing Board's decision. The natural common-sense choice is, of course, to review, since the manufacturing license is one of the three main types of licenses granted by the Commission. As indicated previously, the license before us today would permit the construction of no less than eight complete barge-mounted nuclear power plants at a manufacturing facility, between now and the end of the century, conceivably involving the expenditure of over $10 billion before further Commission review. Not, I would say, an everyday sort of decision.

Beyond that, there are serious safety questions about this design. The chief concern is the adequacy of the protection against burns or explosions of hydrogen gas which may be generated during an accident.[2] The ability of a containment to resist a hydrogen burn is proportional to PV, the containment design pressure (P) times the containment volume (V). On this basis, the ice condenser containments

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[1] More recently, the NRC's Regulatory Reform Task Force proposed that the Commission abandon its "immediate effectiveness" reviews, in effect that the Commission revert to the AEC practice of insulating itself from the agency's major decisions, a step which the Task Force stated "would enhance the predictability and orderliness of the licensing process and would avoid producing a needless sense of uncertainty."

[2] This problem is discussed in greater detail in my separate views relating to the McGuire Unit 1 operating license, *In the Matter of Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2), CLI-81-15, 14 NRC 1, 5 (1981).

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used in the floating nuclear power plant design are about six times less capable of withstanding hydrogen fires than the ordinary large pressurized water reactor containments.

The same ice condenser containment design is used in a number of plants in operation or nearing completion. In these cases, an accommodation had to be made between the demands of safety and the realities of the plants' construction — the containments were largely completed even in the case of the plants that were under construction. The resulting compromise was to require installation of a system of ignition points to facilitate the controlled burning of the hydrogen which might be generated during an accident — fighting fire with fire, so to speak. But no such compromise needs to be made in the case of plants whose construction has not yet begun. The right way to deal with this problem is to require a larger and stronger containment in the first place.

The time to decide whether or not to impose this requirement is now, before the start of construction, and not later, during the course of the construction permit review. By that time, the containment may well have been built, or several may have been built, and strengthening them will not be possible as a practical matter.

From what I can tell, these issues received scant attention in the hearing. They are barely touched upon in the Board decision which makes only a passing reference to the Commission's most recent rule establishing hydrogen control requirements for several named plants, including the manufacturing license design then under review. The significant fact about this rule, in the context of today's decision, is that the Commission made clear that the hydrogen control provisions of the rule "are to be considered necessary but not necessarily sufficient." The Commission went on to say:

> ". . . the issue of the sufficiency of the hydrogen control measures required by these provisions may be considered in the manufacturing license proceeding, and the Commission may decide to impose additional requirements. Further studies in the area of hydrogen control, containment loading, and mitigation may, at some later date, resolve this issue sufficiently so that it may be addressed by further rulemaking and removed from the pending manufacturing license proceedings."

No such rulemaking has taken place and thus the Commission has not found that these requirements are sufficient.

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SEPARATE VIEWS OF COMMISSIONER AHEARNE

I did not intend to do an immediate effectiveness review of OPS because we already spent a lot of time considering OPS requirements in connection with issuing TMI requirements for construction permits and manufacturing licenses. As written, OPS is the *only* manufacturing license covered by 50.34(f). The TMI issues will have to be reconsidered for any further manufacturing license. We clearly were considering OPS when we considered the manufacturing license requirements in 50.54(f). I see no reason to duplicate that effort now.

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Cite as 16 NRC 1698 (1982) CLI-82-38

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket Nos. 50-247**
50-286

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF NEW YORK
(Indian Point, Unit 3) **December 22, 1982**

In its review pursuant to 10 CFR 50.54(s) of the state of offsite emergency preparedness as respects Indian Point Units 1 and 2, the Commission determines that despite the continued existence of certain previously-identified planning deficiencies, sufficient progress has been made in overcoming these deficiencies and progress will continue to be made so as not to warrant shutdown or any other enforcement action against the Indian Point licensees at the present time.

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EMERGENCY PLANS: ENFORCEMENT ACTION FOR DEFICIENCIES

Under 10 CFR 50.54(s), if the Commission finds after April 1, 1981 that the state of preparedness with respect to an operating nuclear power reactor does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, and if the identified deficiencies are not corrected within 120 days, then a determination must be made whether the reactor should be shut down until the deficiencies are remedied; whether some other enforcement action is appropriate; or whether no enforcement action is needed. Under the regulation, the decision on enforcement action is to be guided by a balancing of factors, including: whether the deficiencies are significant for the plant in question; whether adequate interim compensating actions have been or will be taken promptly; and whether there are other compelling reasons for continued operation.

DECISION

I. BACKGROUND

Under 10 CFR 50.54(s), if the Commission finds after April 1, 1981 that the state of preparedness with respect to an operating nuclear power reactor does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, and if the identified deficiencies are not corrected within 120 days, then a determination must be made whether the reactor should be shut down until the deficiencies are remedied; whether some other enforcement action is appropriate; or whether no enforcement action is needed. Under the regulation, the decision on enforcement action is to be guided by a balancing of factors, including: whether the deficiencies are significant for the plant in question; whether adequate interim compensating actions have been or will be taken promptly; and whether there are other compelling reasons for continued operation.

Efforts to improve emergency planning and preparedness related to Indian Point Units 2 and 3 have continued since the Commission's emergency planning regulations for operating reactors went into effect on April 1, 1981. The situation is complicated by the fact that planning and preparedness for Indian Point include the interaction of the two Indian Point licensees, the State of New York, and four counties — Orange, Rockland, Putnam and Westchester.

The NRC had previously initiated a 120-day clock for emergency preparedness deficiencies related to Indian Point and the other operating nuclear power plant sites in New York State (Ginna, Nine Mile Point, and FitzPatrick). Letter from Boyce Grier, NRC, to licensees, dated April 24, 1981. The action was initiated based on memoranda sent to the NRC from FEMA headquarters which characterized and transmitted a FEMA Region evaluation of the New York State and County

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emergency plans.* The NRC letters to New York State nuclear power plant operators indicated that, although the assessment of the overall state of emergency preparedness had not been completed, the NRC was of the view that a number of the deficiencies identified by FEMA needed to be removed in order for the NRC to conclude that "appropriate protective measures can and will be taken in the event of a radiological emergency at your facility." The FEMA letter which NRC transmitted to New York State nuclear power plant operators stated that the Statewide Radiological Emergency Preparedness Plan was deficient in three broad respects, most important of which was the "conflict between State and county authorities and responsibilities pertaining to radiological emergency preparedness." This deficiency was said to "pervade" the plan, and unless resolved, the plan would remain deficient, even if all other planning standards were adequately addressed. In addition, the letter stated that the plan needed greater specificity in a number of areas, and that certain planning criteria had yet to be addressed. Our regulatory staff concluded in August 1981 that the deficiencies had been satisfactorily resolved, basing that conclusion on FEMA's advice that the state of planning was generally adequate. *See* FEMA letter dated August 19, 1981. FEMA observed at the same time that a final determination on the adequacy of preparedness could not be made until an exercise had been observed at each site.

On June 16, 1982, the NRC staff requested an updated Federal Emergency Management Agency (FEMA) finding on the adequacy of offsite preparedness around the Indian Point site. FEMA's response, dated June 30, 1982, was based on a review of the radiological emergency response plans of the State of New York and the counties of Orange, Putnam, Rockland and Westchester; the performance of these political jurisdictions during an exercise of the plans conducted on March 3, 1982; and a review of comments made at two public meetings held in Westchester and Orange counties on July 26 and 27, 1982. Based on the review of the responses from the State of New York relating to the State and county components of the Radiological Emergency Preparedness Plan (REPP), and after review of the legislative action taken by the Rockland County Legislature (Resolution 320, dated May 18, 1982), FEMA determined that significant deficiencies existed with respect to five planning standards of NUREG-0654/FEMA-REP-1. Our regulations require compliance with these standards, as set forth generally in 10 CFR §§50.47(b) and 50.54(q). Accordingly, the Commission notified the reactor licensees on August 3, 1982 that unless the significant deficiencies identified by FEMA were corrected within 120 days, the NRC would consider whether enforcement action was appropriate.

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*Memoranda dated April 2, 1981 and April 23, 1981 from John E. Dickey, FEMA, to Brian Grimes, NRC; letter dated April 6, 1981 from Vincent Forde, FEMA Region to William C. Hennessey, State of New York.

II. RECENT DEVELOPMENTS SINCE AUGUST 3, 1982

Following the Commission's August 3, 1982 notice, five task forces, consisting of personnel from FEMA, the U.S. Environmental Protection Agency, the U.S. Food and Drug Administration, New York State, the Power Authority of the State of New York (PASNY), Consolidated Edison Company of New York, and the three counties located in the 10-mile emergency planning zone (Westchester, Orange and Putnam) were organized to address the deficiencies. Rockland County was an observer at several sessions. In response to a request from the Commission that it conduct an exercise for the purpose of evaluating preparedness within the 120-day period, FEMA replied on October 18, 1982 that conduct of such an exercise would be "unrealistic," in view of the planning-related activities then under way. Therefore, FEMA stated, the principal focus of its status report at the conclusion of the 120-day period would be the status of planning; it would also discuss the feasibility of plan implementation. Subsequently, FEMA will evaluate overall preparedness after an exercise to be held in March, 1983.

III. FEMA'S DECEMBER 17, 1982 STATUS REPORT

FEMA provided the Commission with a status report on offsite emergency planning for Indian Point on December 17, 1982. On December 21, 1982 FEMA briefed the Commission on its report. This report discusses the status of remedial actions, the concerns raised at public meetings, and provides an updated plan review. All 34 sub-element deficiencies that resulted in five "planning standards" being rated as significantly deficient in FEMA's earlier July 30, 1982 status report have been addressed in this report. During the 120-day clock, major improvements in offsite planning have occurred, and much work continues. FEMA stated that the REPG staff, employees of the counties, and personnel of both utilities "have put forth an impressive level of effort and, through effective management, hard work and dedication, have made significant progress." FEMA Update Report of December 16, 1982 at 3. However, despite this substantial progress, some problems remain, as we discuss below.

A. The Westchester County Radiological Emergency Response Plan (WCRERP) relies on both public and commercial bus drivers for emergency evacuation of populations dependent on public transportation. FEMA has expressed concern regarding the availability of these commercial bus drivers in an emergency because it does not believe that it has good information on how they would respond. As a compensating measure, the REPG proposes to rely upon New York State military forces (National Guard) to respond to an emergency at the Indian Point Nuclear Power Generating Station, to replace any private and public bus operators who do not respond. REPG has provided for FEMA's review a New York State Division of Military and Naval Affairs (DMNA) plan for the utilization

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of military forces to replace civilian bus drivers. This plan, "OPLAN Radiological Emergency — Indian Point," sets forth detailed procedures for a DMNA takeover of bus fleets and evacuation by commercial and/or school buses manned by New York State military personnel of Westchester County residents dependent on public transportation.

According to FEMA's evaluation, the DMNA plan to compensate for the possible failure of local bus drivers to respond to a radiological emergency at Indian Point would increase normal evacuation times by 4 or 5 hours, assuming an emergency requiring evacuation from all sectors of the 10-mile EPZ as well as the failure of *any* private bus operators to respond. FEMA concluded that in a worst case situation (*i.e.*, an evacuation required for all sectors and no response by any commercial drivers), the additional time required for the military to respond was unsatisfactory.

B. Problems related to Rockland County's non-participation in the full planning process remain. FEMA feels that this situation has improved significantly since the initiation of the 120-day period. The State has developed a generic compensatory plan to deal with the problem of a county which either has an inadequate plan or elects not to participate. This generic plan is supplemented by site-specific planning for Rockland County. A senior management team (comprised of six State agencies) has been identified, and training has been initiated. This team and Rockland County personnel conducted a tabletop exercise on November 30, 1982. There has also been other training within the county. The State has furnished funds to the county for use in offsite plans and preparedness during the 120-day clock. Also, the county has initiated action on its own plan which is to be furnished in preliminary draft form to FEMA in January 1983. FEMA recognizes that while the status of plans and preparedness in Rockland County is not up to the standards both it and the county desire, action is ongoing to remedy the situation.

C. As noted, it was not feasible to conduct a preparedness exercise before the end of the 120-day period. An exercise is scheduled for early March, 1983.

IV. NEED FOR ENFORCEMENT ACTION

The Commission has decided that no shutdown or other enforcement action is needed at this time. Several considerations lead us to this conclusion. First, substantial progress has been made since last July and additional progress will be made in the coming months. FEMA has concluded that the remedial actions that have been accomplished and those scheduled in the next few months constitute offsite plans that will be feasible and capable of implementation. Moreover, it is very unlikely that a severe accident would occur in these few months (until March or April of 1983) while progress continues. Thus the Commission concludes that operation of Unit 2 (Unit 3 is not planned to go back on line until March or April of 1983) during this interim period will pose no undue risk to public health and safety.

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Second, FEMA and the State of New York are working on the concern that there may be a bus driver problem in Westchester County. Compensating measures are proposed which would probably be adequate in many accident scenarios. Moreover, even in the event evacuation should prove infeasible because of a lack of drivers and delayed State response, many members of the public would share transportation by carpooling, and sheltering without transportation could prove to be the most effective dose reduction measure in any event.

There are now commitments from Rockland County to solve the problem there by cooperating with State and Federal officials in developing a plan. FEMA hopes to have a workable Rockland plan in early 1983. FEMA has stated that "FEMA staff has been most impressed with the recent efforts of the Rockland County officials to become active participants in the process." The seriousness of this deficiency must be viewed in light of two considerations. First, there is a State plan calling for State officials to take over county functions in the event that the county does not fulfill them. Though Rockland officials believe that this plan is inadequate, FEMA notes that the State plan should be recognized. Second, we recognize, as did FEMA in its briefing of the Commission, that federal approval of plans is not a mandatory prerequisite for effective emergency response in every case. Though less (or different) than what federal authorities might prefer, State plans (and *ad hoc* responses) have in many cases proved sufficient in the past.

Finally, all the remaining problems relate to State and local governments and their roles in offsite response. The problems are beyond the power of the licensees to control. Thus there is no question here of penalizing licensees for violations or other improper conduct on their part.

Our regulations allow but do not mandate immediate shutdown of the Indian Point units. We rejected a mandatory shutdown formulation when we adopted what is now 10 CFR 50.54(s)(2)(ii). *See* 44 *Fed. Reg*. 75171 (12/19/79); 45 *Fed. Reg*. 50705-07 (7/31/80). We do not believe that the two planning standard deficiencies noted by FEMA warrant immediate shutdown.

Accordingly, we have decided that no enforcement action is required at this time. However, the Commission will continue to monitor the progress that is made. FEMA has advised that an exercise will be conducted in March and it will be providing the Commission with an update on the status of planning and preparedness within 30 days thereafter. The status of emergency planning will be revisited by the Commission upon receipt of FEMA's evaluation of the March 1983 exercise for Indian Point. In the interim, FEMA is asked to present to the Commission monthly reports on the status of Rockland County planning and training on the plans being developed, the status of resolution of the bus driver issue in Westchester County, and any other emergency preparedness issues that arise as work goes forward.

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Commissioners Gilinsky and Asselstine dissent from this decision. The separate views of each Commissioner are attached.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 22nd day of December, 1982.

CHAIRMAN'S STATEMENT ON INDIAN POINT

Emergency planning and preparedness include the interaction of the two Indian Point licensees, the State of New York and four counties — Orange, Rockland, Putnam and Westchester. Also, as noted by the Federal Emergency Management Agency (FEMA), emergency planning and preparedness is an evolutionary process. Emergency preparedness involves workable plans and confirmation of the workability of the plans by means of an exercise.

I believe that planning and training must be completed before a useful exercise can be held. The exercise held in March 1982 disclosed deficiencies which in part arose from the fact that State and county emergency plans had not yet been fully developed. Hence, in my opinion, the follow-up action called for by the Commission's start of the 120-day clock had to place emphasis on completion of these plans. Since that time considerable progress has been made in improving those plans; however, all of them have not yet been fully developed.

Since the principal issue in this regard is the state of development of the Rockland County plan, Rockland County should complete its plans before the March 1983 exercise is conducted.

Two areas of deficiency were noted in the interim FEMA findings: the lack of a plan by Rockland County and the possibility of non-response of bus drivers in Westchester County.

While these deficiencies are being corrected, I believe that in the interim the Indian Point reactors can be allowed to operate for the following reasons:

a) Plans for all parts of the program have been developed except for the final Rockland County plan.

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b) The State has a compensatory plan (generic) to handle any county with an inadequate plan and it is supplemented by site-specific planning for Rockland County.

c) Rockland County is developing its own plan and expects to furnish a preliminary draft to FEMA in January 1983. FEMA has been impressed with the efforts of Rockland County officials to become active participants in the process.

d) The probability that evacuation plans will have to be activated due to a serious accident at Indian Point is very small and the probability of needing them while plans are being completed and tested is much smaller still. Nevertheless, if needed, most of the plans are available and compensatory measures can be taken for those that are not.

e) With regard to the possible non-response of bus drivers in Westchester County, I agree with the reasons for allowing the plant to operate set forth in the Commission's Decision. Nevertheless, efforts to obtain expeditious resolution of this issue should be increased.

ADDITIONAL VIEWS OF COMMISSIONER AHEARNE

Prior to the Three Mile accident there were essentially no offsite emergency plans. A major positive result of the analyses following that accident was the requirement that emergency plans be developed. None have been more difficult than those for the area around the Indian Point reactors. These difficulties stem from the large population surrounding the plants and the unusual multigovernment involvement required to develop successful plans. The reluctance of Rockland County for many months to participate is such an example.

The basic concept of emergency planning is to develop procedures and ensure availability of necessary resources in order to adequately handle a very low probability but potentially high consequences accident. FEMA, the NRC, the State of New York, the four surrounding counties, the two utilities, and the public have been struggling with the question whether adequate emergency plans can be developed for Indian Point. There are many who believe they cannot, and consequently argue these plants should not be allowed to operate. There are some who believe the plans are already adequate. My position, which I believe is shared by many of the various government representatives, is that planning in this context is difficult, that we do not yet have assurance that the plans will work, but that substantial progress has been made over the several years of effort.

In our meeting yesterday, both the Deputy Director of FEMA and the FEMA Regional Administrator stressed that substantial progress has been made at Indian Point. Three years ago there was essentially nothing. Four months ago the combined effort had produced plans, but with thirty-four open items. Yesterday FEMA reported these had been reduced to five: one problem concerning bus

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driver availability in Westchester County and four problems concerning Rockland County.

The Commission now has to address whether or not we are to allow the reactors to remain operating. I believe we should, but conditionally.

Most of the surrounding population is in Westchester and Rockland Counties. Concerns about Westchester County have been decreasing rapidly as the planning efforts have continued. These planning concerns have been reduced to one issue, but an issue that has been constant over the many months of planning review. It is time to reach a resolution regarding a mechanism to provide adequate bus transportation for those who would need it.

We have received mixed signals with respect to Rockland County. FEMA has indicated substantial progress has been made and hopes to receive a Rockland County emergency plan early next year. On the other hand, the Vice Chairman of the Rockland County Legislature in a recent letter indicated there are many steps that have to be taken prior to approval of the county emergency plan that is being developed. Since Rockland County represents a substantial portion of the people within a 10-mile zone of Indian Point (probably around 40 percent), it is essential that adequate planning be done for the county. This also is an issue we must revisit.

I believe that the "adequate interim compensating actions" or "other compelling reasons" called for by our regulations consist of (1) the substantial improvement that has been made during the running of the 120-day clock, evidenced by a reduction from 34 to 5 open items, and (2) the plans developed by the State of New York regarding use of State personnel for emergency duties in Rockland County and of National Guard personnel for bus drivers in Westchester County. FEMA has expressed its view that the latter is not adequate "in a worst case situation." However, these are only interim measures.

Some argue FEMA has addressed only planning and not implementation. As a consequence they argue we should not have any confidence in emergency preparedness at Indian Point. However, FEMA noted in its letter to Mr. Dircks of December 17th that "the 120-day time frame in NRC's regulations is not keyed to the FEMA planning and preparedness evaluation process and has not been adequate to encompass all the actions necessary . . ." In particular, FEMA has expressed the view that it cannot reach a conclusion on preparedness until the exercise scheduled for next March has been held. Thus the primary significance of FEMA's focus on planning is that it has been unable to complete the steps necessary to evaluate implementation, not that it has reached adverse conclusions. In fact, at our meeting, FEMA indicated that not only is the plan feasible, but it is capable of implementation.

Consequently, in light of the progress that has been made, the low probability of requiring use of the plans within the next four months (I note that for most of this time only one of the two plants is scheduled to operate), and the planned emergency exercise, I am willing to allow operation of the plants for now. This has been a

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close judgment and I wish to revisit this issue one month after the exercise, and certainly no later than the end of April. At that time we should have FEMA's evaluation of the exercise, as well as a resolution of the Westchester County bus driver issue and approved Rockland County emergency plans. If these do not occur, at present I do not believe I would support continued operation of the plants.

ADDITIONAL VIEWS OF COMMISSIONER ROBERTS

I agree with the finding by the Commission majority that no shutdown or other enforcement action is currently warranted for Indian Point Units 2 and 3 for several additional reasons not included in the attached Memorandum.

Many of the deficiencies noted by FEMA go beyond the requirements of 10 CFR 50.47(b) and the joint NRC/FEMA emergency planning guidance contained in NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." Thus, the fact that five of the original 34 sub-elements are not completely resolved does not mean that the overall state of emergency preparedness is inadequate. The Commission must evaluate the significance of these remaining deficiencies and determine their effect on the overall adequacy of emergency planning at the site. Using that approach, I conclude that the Commission action was proper.

The FEMA status report indicated that the first deficiency deals with whether the bus drivers will respond in an emergency to assist in the evacuation of that portion of the public without private transportation. While it is desirable that public transportation be available to assist in any evacuation, the availability of such services is not required by the Protective Response Planning Standards. That standard requires that (a) a range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public, (b) guidelines for the choice of protective actions be developed and in place, and (c) ingestion pathway protective actions have been developed. Nowhere does this regulation require that public transportation be available within a particular time frame.

FEMA admits that bus driver nonperformance is only speculative. Furthermore, it is FEMA's experience that in an emergency, designated emergency workers and volunteers do not shirk their assigned tasks but do a good job.

FEMA indicated that the compensating actions planned by the State of New York to utilize National Guard personnel as bus operators may not be adequate during a fast-breaking accident. The NRC staff indicates that in such low probability events *sheltering*, not evacuation, is usually the preferred initial protective action until the plume has passed. After the plume has passed an evacuation might

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be considered. Therefore, in such a fast-breaking scenario, time would be available to mobilize National Guard or other State resources. For these reasons, I feel the public transportation provisions of the county and New York emergency response plans are sufficient.

Rockland County's failure to participate in past emergency planning efforts was cited as the reason for the planning standard P, Responsibility for the Planning Effort, not being satisfied. As a compensating measure, the State of New York has agreed to take over the necessary response activities. State management teams have been selected and are being trained to implement the compensating plan. Additionally, Rockland County is now developing an emergency response plan which will be completed in early 1983. I feel these steps constitute adequate interim compensatory actions.

While FEMA indicated that the majority of deficiencies were corrected by emergency planning improvements, it felt that a conclusion on emergency preparedness could not be made until an exercise could be conducted to test the emergency plans. I feel that this introduces an artificial distinction between "planning" and "preparedness." While I agree that there is much more to emergency preparedness than mere paper plans, I do feel that considering an emergency exercise as the only true test of preparedness is inappropriate.

Much can be learned of emergency preparedness from methods other than joint exercises, such as smaller drills, training, and interaction with offsite emergency response personnel. An emergency exercise is but one method to evaluate the state of emergency preparedness. Because of this, and based on the comments from FEMA, we can indeed say that the overall emergency preparedness has significantly improved around the Indian Point site.

SEPARATE VIEWS OF COMMISSIONER GILINSKY REGARDING INDIAN POINT

The Indian Point nuclear power plants should not be allowed to operate until the Federal Emergency Management Agency can advise this Commission that — in the words of our regulations — there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

The State and Counties performed so poorly in the Indian Point emergency exercise earlier this year that the Commission had to initiate a four-month remedial period. Indian Point is the only nuclear power plant site in the United States for which this was necessary. The four-month period ended December 3, 1982. Under our regulations, the Commission must now assess the situation and decide whether the plants should continue to operate.

This is the second time the Commission has had to initiate such a remedial period at Indian Point. The previous one was triggered by deficiencies found in the

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first review of emergency plans in April, 1981. Many of the planning deficiencies cited after the 1982 exercise were similar to those found in the 1981 review.

We have now been informed by FEMA that some of the significant deficiencies have still not been corrected. Moreover, while it stressed that improvements have been made, FEMA declined to make a finding that there is adequate emergency preparedness in the vicinity of Indian Point until it reviews the results of a full-scale exercise scheduled for March of next year.

In view of this unfortunate history of State and county performance, and the obvious fact of uniquely high population in the Indian Point area, we should not approve operation of the power plants without a favorable FEMA finding on emergency preparedness.

I would add that I agree with Commissioner Asselstine's legal analysis.

DISSENTING OPINION BY COMMISSIONER ASSELSTINE

I strongly disagree with the decision today by the Commission majority to delay a decision on the adequacy of emergency preparedness at the Indian Point plants until after the Federal Emergency Management Agency's evaluation of the March 1983 exercise and to take no enforcement action at this time regarding emergency preparedness for the Indian Point plants. For the reasons set forth below, I believe that our regulations require that the Commission promptly consider in detail the need for enforcement action, including the shutdown or derating of the Indian Point plants, based upon the present state of emergency preparedness for those plants. I therefore would issue a "show cause" order requiring that the Indian Point plants be shut down until either (1) FEMA finds that the significant deficiencies in emergency preparedness for the Indian Point plants have been corrected, or (2) the licensees demonstrate, in accordance with our regulations, that continued operation of the plants is warranted in the absence of such a finding by FEMA. I also believe that the public interest requires that such a "show cause" order be made immediately effective in the case of the Indian Point plants. This would prevent the Indian Point plants from resuming operation until FEMA determines that all significant emergency preparedness deficiencies have been corrected or the Commission has sufficient information to determine that the resumption of plant operations is warranted for other reasons.

Discussion

The Commission's regulations (10 CFR section 50.54(s)(2)(ii)) contemplate a two-stage process for Commission review in those cases in which significant deficiencies in emergency preparedness have been identified. At the end of the

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120-day period provided for the correction of deficiencies, the Commission must consider whether the deficiencies have been sufficiently corrected to permit a finding that the state of emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. If it can make this finding, the Commission need not consider possible enforcement action.

However, if the Commission *cannot* make this finding at the end of the 120-day period, it must consider the need for enforcement actions, including the shutdown or derating of the plant, taking into account, among other things, the factors specified in our regulations. Following consideration of those factors, the Commission must decide on the need for enforcement action until the significant emergency preparedness deficiencies have been corrected.

In the case of the Indian Point plants, much has been done to correct the numerous deficiencies in emergency *planning* that were identified by FEMA in its August 2, 1982, letter that served as the basis for commencing the 120-day period. These improvements, which are documented in the December 19, 1982, report to the Commission from FEMA, have come about as the result of recent efforts by the State of New York, the involved local governments, FEMA and other involved Federal agencies. Based upon these efforts, FEMA has concluded that the significant deficiencies *in planning* have been sufficiently corrected to permit an overall finding that *emergency planning* is adequate.

However, FEMA has advised the Commission that it is unable to reach a judgment at this time on the overall adequacy of *emergency preparedness* — that is, whether the planning measures can and will work in the event of an accident. It is important to recognize that our regulations speak in terms of *preparedness* and not planning. Thus, on the fundamental finding required by our regulations at the end of the 120-day period, FEMA has advised the Commission that it is *not* able to find that the state of emergency preparedness for the Indian Point plants provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

I believe that FEMA's advice on this matter is entitled to great weight, and I see no basis for the Commission to conclude at this time that there is reasonable assurance that the Indian Point emergency plans will, in fact, work in the event of an accident. Indeed, I do not read the majority's decision as reaching such a conclusion.

The question thus before the Commission today is whether, in the absence of reasonable assurance that the Indian Point emergency plans will work if needed, some enforcement action is warranted. The need for, and nature of, such enforcement action involves a balancing of relevant factors.

For the reasons that follow, I believe that enforcement action, in the form of a "show cause" order, is justified. I also believe that the public interest requires that such an order be made immediately effective, thereby preventing further operation

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of the Indian Point plants until the significant deficiencies in emergency preparedness have been corrected or until the Commission has sufficient information to support a finding that continued operation is warranted.

In my view, three factors justify the issuance of an immediately effective "show cause" order. First, there is not reasonable assurance now that the emergency plans for the Indian Point plants, even though improved, will function adequately in the event of an accident. Second, significant deficiencies in emergency preparedness for the Indian Point plants have existed for the past 20 months and, despite the institution of two 120-day periods during that time, it is still not possible to predict when those deficiencies will be corrected. The lack of further enforcement action leaves open the possibility of unlimited future operation of the plants in the face of continuing significant deficiencies in emergency preparedness. Third, emergency preparedness, although an important element in all cases, is of particular significance in the case of the Indian Point plants, given the large population in the vicinity of the Indian Point site.

I believe that these three factors outweigh the factors cited by the Commission majority in its decision not to pursue any enforcement actions at this time. In particular, I do *not* believe that the progress to date in improving planning, though laudable, or the probability of a serious accident involving offsite releases justifies the Commission majority's no-action decision or the unlimited future operation of the Indian Point plants. In addition, I do not believe that the Commission has before it in the record other information that demonstrates a compelling need for continued operation of the Indian Point plants until the significant deficiencies in emergency preparedness are corrected. For these reasons, I would issue an immediately effective "show cause" order requiring the shutdown of the Indian Point plants until FEMA has determined that the significant deficiencies in emergency preparedness have been corrected, or until the licensees have provided sufficient information to justify the continued operation of the plants.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket Nos. 50-275-OL**
50-323-OL

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power
Plant, Units 1 and 2) **December 23, 1982**

The Commission answers three certified questions relating to the Appeal Board's jurisdiction in this operating license proceeding presented by the relationship between the independent design verification program for the Diablo Canyon facility and the licensing proceeding for the plant (*see* ALAB-681, 16 NRC 146 (1982)). In addition, the Commission denies a request by intervenors for a hearing on applicant's request for an extension of its low-power license.

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

Where a motion to reopen a licensing proceeding relates to a previously uncontested issue, the moving party must satisfy both the standards for admitting late-filed contentions (10 CFR 2.714(a)) and the criteria established by case law for reopening the record.

OPERATING LICENSE PROCEEDINGS: EFFECT OF REQUEST FOR LOW-POWER LICENSE

A request for a low-power license does not give rise to a proceeding separate and apart from a pending full-power operating license proceeding.

MEMORANDUM AND ORDER

A. Background

On July 17, 1981, the Atomic Safety and Licensing Board (Licensing Board) issued a partial initial decision in the Diablo Canyon operating license proceeding that approved the request of Pacific Gas and Electric Company (PG&E) for a license to load fuel and conduct low-power testing.[1] Following the effectiveness review conducted pursuant to 10 CFR 2.764(f), the Commission authorized the issuance of such a license for Diablo Canyon Nuclear Power Plant, Unit 1.[2] The NRC staff issued the license on September 22, 1981. Soon thereafter, PG&E informed the NRC of the discovery of an error in the seismic design of equipment and piping in the containment annulus of Diablo Canyon Unit 1. Further inquiry by PG&E and the NRC staff disclosed additional errors in the plant. On November 19, 1981, the Commission suspended PG&E's license to load fuel and conduct low-power testing pending the satisfactory completion of an independent design verification program (IDVP).[3] The IDVP remains in progress at this date.

On June 8, 1982, the "Joint Intervenors"[4] in the operating license proceeding filed a motion requesting the Atomic Safety and Licensing Appeal Board (Appeal Board) to vacate the Licensing Board's July 17, 1981 findings on its *sua sponte* review of the Diablo Canyon quality assurance program, revoke the low-power license, and reopen the record for hearing and the submission of relevant new evidence. The Joint Intervenors focused their request on evidence regarding breakdowns in the Diablo Canyon Quality Assurance and Quality Control (QA/

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[1] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981). This decision relied on several earlier adjudicatory decisions and was conditioned upon one subsequent decision. LBP-78-19, 7 NRC 989 (1978); LBP-79-26, 10 NRC 453 (1979); ALAB-644, 13 NRC 903 (1981) (Seismic); and ALAB-653, 14 NRC 629 (1981) (Physical Security).

[2] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-22,14 NRC 598 (1981).

[3] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Unit 1), CLI-81-30, 14 NRC 950 (1981).

[4] Collectively labeled, the Joint Intervenors are the San Luis Obispo Mothers for Peace, Scenic Shoreline Preservation Conference, Inc., Ecology Action Club, Sandra Silver, Gordon Silver, Elizabeth Apfelberg and John J. Forster.

QC) program. On July 16, 1982, the Appeal Board certified to the Commission three questions regarding Joint Intervenors' motion (ALAB-681, 16 NRC 146).

Subsequent to the certification, Governor Edmund G. Brown, Jr., filed a motion to reopen the full-power proceeding with the Licensing Board. Governor Brown's motion focused on essentially the same subject as Joint Intervenors' motion to reopen the low-power proceeding. In the August 31, 1982 initial decision concluding its review of PG&E's full-power operating license application, the Licensing Board declared that the motion to reopen the full-power proceeding was misdirected, stating that QA/QC issues had been decided in full in the Licensing Board's July 17, 1981 partial initial decision in the low-power proceeding.[5] The Licensing Board noted that it no longer had jurisdiction of that record but held Governor Brown's motion under advisement pending the Commission response to these certified questions. The Commission intends this response to the certified questions to apply equally to the motion to reopen the full-power proceeding.

B. Certified Questions

The Appeal Board's certified questions focus on the jurisdictional issue presented by the relationship between the IDVP and the operating license proceeding. The questions and the Commission responses are set forth below.

1. Did the Commission intend its November 19, 1981 order suspending the low-power license for Diablo Canyon, Unit 1, and establishing an independent verification program to deprive the appropriate adjudicatory boards of jurisdiction to consider a motion to reopen the record based on the QA/QC questions regarding Diablo Canyon?
2. If not, does the Commission now wish to relieve the adjudicatory boards of jurisdiction with regard to the QA/QC issues at Diablo Canyon?

The Commission did *not* intend the issuance of the suspension order and establishment of the IDVP to deprive the adjudicatory boards of jurisdiction to consider and act on the motions to reopen and does not wish to do so now. Thus, these questions are answered in the negative.

3. If the Commission has not divested, and does not intend to divest, the adjudicatory boards of jurisdiction over the QA/QC issues at Diablo Canyon what, if any, instructions does the Commission have with regard to timing or other matters raised by the motion to reopen?

The Commission believes the motions to reopen should be addressed according to the criteria for resolving such matters established in its case law and rules of practice, 10 CFR Part 2. Where a motion to reopen relates to a previously

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[5] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-82-70, 16 NRC 756, 762 (1982).

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uncontested issue, the moving party must satisfy both the standards for admitting late-filed contentions, 10 CFR 2.714(a), and the criteria established by case law for reopening the record. *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361 (1981). Furthermore, the Commission notes that reopening the record does not necessarily require that fuel loading and low-power testing be stayed. The Appeal Board shall respond separately to stay requests in accord with the applicable criteria.[6]

C. Request for Hearing on Low-Power License Extension

Also pending before the Commission at this time is Joint Intervenors' August 17, 1982 request for a hearing pursuant to section 189a of the Atomic Energy Act on PG&E's application for an amendment extending the suspended low-power license. PG&E's low-power license, due to expire September 22, 1982, one year from the date of issuance, remains in effect following PG&E's timely request for renewal pending a Commission decision on the application for an extension.[7]

As the Commission has previously held, a request for a low-power license does not give rise to a proceeding separate and apart from a pending full-power operating license proceeding.[8] It follows that this hearing request is subsumed within the scope of the continuing full-power proceeding, as was the request for a low-power license. Further operation at low power is within the scope of PG&E's application for a full-term, full-power license and is controlled by the record developed to date in the operating license proceeding. Thus, there is no section 189a right to a separate hearing here and no need for any "significant hazards consideration" finding of the type that would be called for were this a separate proceeding on an application for a license amendment. For the same reason, *Sholly v. U.S. Nuclear Regulatory Commission*, 651 F.2d 780 (D.C. Cir. 1980) (per curiam), *cert. granted*, 451 U.S. 1016 (1981), does not require a hearing in this instance. This request for a hearing would ordinarily be treated as a motion to reopen the low-power record. In this instance, Joint Intervenors have already filed a motion to reopen the low-power record with the Appeal Board. Accordingly, the

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[6] In this regard, currently there is nothing to stay. As a separate matter, several steps must occur independent of the requests addressed here before fuel loading, low-power testing and full-power operation may be authorized. Before fuel loading and low-power testing, the Commission must decide whether to lift the suspension and reinstate the fuel loading and low-power license — concluding the Commission enforcement action taken on November 19, 1981 (license suspension, see note 3 *supra*). In addition, the Commission must complete its immediate effectiveness review before full power can be authorized. The Commission does not plan to conduct any additional low-power effectiveness review. However, it still has a Licensing Board decision on full-power issues to review and will discuss uncontested issues with the staff before a full-power license may be issued.

[7] *See*, 5 U.S.C. 558; 10 CFR 2.109.

[8] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plants, Units 1 and 2), CLI-81-5, 13 NRC 361, 362 (1981).

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request for a hearing on the extension of the low-power license is duplicative and is hereby denied.

The separate views of Commissioner Gilinsky are attached.

It is so ORDERED.

For the Commission,

Samuel J. Chilk
Secretary of the Commission

Dated at Washington, D.C.,
this 23rd day of December, 1982.

SEPARATE VIEWS OF COMMISSIONER GILINSKY DIABLO CANYON CERTIFICATION

I am astonished and disappointed that this Commission, which has so frequently and vociferously announced its desire to simplify the hearing process, should reject the suggestion that the Diablo Canyon low-power and the full-power hearings be merged into a single hearing. As far as I can tell, the only plausible rationale for keeping two hearings going is the remote possibility that this would permit PG&E to begin low-power testing (though not commercial operation) a few weeks earlier than would otherwise be possible.

This hardly justifies the confusion and procedural complexity caused by two simultaneous hearings on the same operating license. The Commission should consolidate the two hearings.

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Cite as 16 NRC 1717 (1982) CLI-82-40

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket No. 50-358**

CINCINNATI GAS AND ELECTRIC COMPANY, *et al.*
(William H. Zimmer Nuclear Power Station, Unit No. 1)

December 23, 1982

The Commission denies a request by intervenors in this operating license proceeding for the Commission to furnish them, at the Commission's or applicants' expense, with the services of a consultant to monitor applicants' compliance with the Commission's November 12, 1982 show-cause order (CLI-82-33, 16 NRC 1489). The Commission also decides that the procedures to be used in the selection of an independent entity to conduct a review of the status of the Zimmer facility pursuant to the show-cause order are adequate; it also declines to institute further procedures for the conduct of the status review.

RULES OF PRACTICE: FINANCIAL ASSISTANCE TO PARTICIPANTS

The Commission is not empowered to expend its appropriated funds for the purpose of funding consultants to intervenors in a licensing proceeding. *See* P.L. 97-88, Title V Section 502 (95 Stat. 1148 (1981)) and P.L. 97-276 Section 101(g) (96 Stat. 1135 (1982)).

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RULES OF PRACTICE: FINANCIAL ASSISTANCE TO PARTICIPANTS

The Commission does not have authority to require license applicants to fund consultants or to assess fees for that purpose where the service to be performed is for intervenors' benefit and is not one needed here by the Commission to discharge its own licensing responsibilities. *See Mississippi Power & Light Company* v. *NRC*, 601 F.2d 223 (5th Cir. 1979), *cert. denied* 444 U.S. 1102 (1980). *See also National Cable Television Association, Inc.* v. *United States*, 415 U.S. 336 (1978). *Federal Power Commission* v. *New England Power Co.*, 415 U.S. 345 (1974).

ORDER

By their petition of November 19, 1982, Zimmer Area Citizens-Zimmer Area Citizens of Kentucky (ZAC-ZACK) and City of Mentor, Kentucky, both intervenors in the Zimmer Operating License Proceeding (jointly "Intervenors"), have asked the Commission to provide them, at the expense of the Commission or the utilities applying for the Zimmer license, the services of a consulting firm for the purpose of monitoring procedures instituted in compliance with the Commission's Order to Show Cause and Order Immediately Suspending Construction, CLI-82-33, 16 NRC 1489 (1982). Intervenors have also requested the Commission to entertain their views with regard to the selection of the independent entity required by the Commission's order to conduct a review of the status of the Zimmer facility and provide a report of its consideration of various alternatives for management of work at Zimmer. For both requests Intervenors seek an answer before the Commission allows further action.

On November 30, 1982 MVPP filed a response in support of Intervenors' petition, urging that the Commission itself select the third-party auditor. In addition, MVPP petitioned the Commission to establish a detailed structure for public participation throughout the audit. Dr. David Fankhauser supports Intervenors' petition, and the applicants strongly oppose it.

The Commission is not empowered to expend its appropriated funds for the purpose of funding consultants to Intervenors. *See* P.L. 97-88, Title V Section 502 (95 Stat. 1148 (1981) and P.L. 97-276 Section 101(g) (96 Stat. 1135 (1982)). Nor does it appear that the Commission has authority to require the utility-applicants to do so or to assess fees for that purpose where the service to be performed is for Intervenors' benefit and is not one needed here by the Commission to discharge its own licensing responsibilities. *See Mississippi Power & Light Company* v. *NRC*, 601 F.2d 223 (5th Cir. 1979) *cert. denied* 444 U.S. 1102 (1980). *See also National*

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Cable Television Association, Inc. v. *United States*, 415 U.S. 336 (1978). *Federal Power Commission* v. *New England Power Co.*, 415 U.S. 345 (1974). Thus, the first request cannot be granted.

With regard to Intervenors' second request, the Commission has delegated authority to the Regional Administrator to review and approve the selection of the independent entity. It is the Commission's understanding that the Regional Director has required and received a statement of the qualifications and information to establish the independence of the entity selected to conduct the independent review at Zimmer pursuant to the Commission's order. That information is already on the public record and has been sent to interested persons with notice that comments will be considered if they are timely submitted. That procedure ensures consideration of public views and is consistent with Commission precedent. *See Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Unit 1), CLI-81-30, 14 NRC 950, 956-57 (1981). The further procedures requested by MVPP will not be instituted; nevertheless, close Commission supervision will continue and the public will be kept informed of progress at Zimmer.

In light of the nature of its response, the Commission sees no need to delay further action in compliance with its show-cause order.

The separate views of Commissioner Gilinsky and additional views of Commissioner Ahearne are attached.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 23rd day of December, 1982.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I voted to deny the request that the Commission take a direct part in the selection of the independent auditor on the understanding that the Commission had asked Mr. Keppler to keep it informed of his progress in conducting this review so as to permit it to step in if it needed to do so. This is what the Commission asked Mr. Keppler to do, and what he is, in fact, doing.

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When I suggested that the Order explain that Mr. Keppler would keep the Commission informed so that we have sufficient time to intervene should we disagree with his proposed action, a majority of the Commission, to my astonishment, voted against the proposal. This makes me wonder whether the Commission is as serious about dealing with Zimmer as I understood it to be.

ADDITIONAL VIEWS OF COMMISSIONER AHEARNE

I disagree with Commissioner Gilinsky's characterization both of the order and of his proposal. The Commission will keep close watch on what is happening at Zimmer and will continue to be deeply concerned about substantive issues.

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Cite as 16 NRC 1721 (1982) CLI-82-41

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of **Docket Nos. 50-247**
50-286

CONSOLIDATED EDISON COMPANY OF NEW YORK
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF NEW YORK
(Indian Point, Unit 3) **December 23, 1982**

The Commission denies in part and grants in part intervenor's motion to direct the NRC staff (1) to reschedule and relocate a planned meeting with its outside consultants and (2) in the future to give notice of such meetings to intervenors at the same time as to other parties.

RULES OF PRACTICE: STAFF MEETINGS WITH PARTIES

Under 10 CFR §2.102, the NRC staff may meet "with any one party" to a proceeding. In scheduling such a meeting, the staff will consider a variety of factors such as the number, location, and schedules of the key participants as well as resource constraints. The intervenor's opportunity to attend should be one of the factors the staff takes into account in determining the location of such meetings.

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RULES OF PRACTICE: STAFF MEETINGS WITH PARTIES

All parties, in the interest of fairness, should be notified at the same time of the scheduling of meetings between the NRC staff and one or more parties to a proceeding.

ORDER

GRANTING IN PART AND DENYING IN PART MOTION TO DIRECT STAFF TO RESCHEDULE MEETING

The Union of Concerned Scientists (UCS) on October 8, 1982 filed a "Motion to Direct Staff to Reschedule Meeting" (hereinafter "Motion") asking us to direct the staff to meet with its consultants either in New York or Washington and, in the future, to give notice of such meetings to intervenors at the same time as other parties.[1] UCS asserted that on October 7 it received a notice dated September 15, 1982 for a staff meeting to be held on October 13 in Albuquerque, New Mexico with Sandia National Laboratories and the licensees for the Indian Point units, Power Authority of the State of New York (PASNY) and Consolidated Edison Company (Con Ed). The purpose of the meeting, according to UCS, was to discuss Sandia's preliminary evaluation of the Indian Point probabilistic safety study. Motion at 1. UCS argued that its obligations as an intervenor required that it attend any such meeting, but that it could not afford the cost of traveling to New Mexico.

We do not believe that we should straitjacket the staff with rigid instructions as to where it should conduct its meetings with its consultants. Presumably a variety of factors will be involved in each such decision, including the number, location, and schedules of the key participants, as well as resource constraints. Further, these considerations, *i.e.*, number and location of participants, etc., are reflected in 10 CFR §2.102, which permits the staff to meet "with any one party . . ." to a proceeding, and apply, if anything, more strongly to staff's meetings with its own consultants. In the absence of a demonstration that meetings were deliberately being scheduled with a view to limiting the ability of intervenors' representatives to attend, the imposition of hard and fast rules would, in our view, needlessly impair the staff's ability to obtain necessary information.[2] This is especially so where the staff has supplied intervenors with a summary of the October 13

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[1] UCS filed a similar motion with the Licensing Board. This motion was denied on October 12.

[2] It was not until late Friday afternoon, October 8, that we received UCS' request that we order the staff to postpone and relocate its October 13 meeting. Monday, October 11, was a federal holiday. Left with little or no time in which to obtain the information essential to any order to postpone the meeting, and without any demonstration by UCS that there was a deliberate attempt to exclude it from the meeting, we did not grant the UCS request.

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meeting. *See* staff letter to Licensing Board, dated October 28, 1982. At the same time, we wish to emphasize that the staff should regard the intervenors' opportunity to attend as one of the factors to be taken into account in making its decisions on the location of such meetings. With regard to the notification of parties, on the other hand, we agree with UCS that fairness demands that all parties be informed of the scheduling of such meetings at the same time, and that part of UCS' motion is therefore granted.

Commissioner Gilinsky dissents from this Order. The separate view of Commissioner Roberts is attached.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 23rd day of December, 1982.

SEPARATE VIEW OF COMMISSIONER ROBERTS

It is my understanding that present staff policy is to notify all parties simultaneously and that such notification was provided in this instance.

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*Commissioner Gilinsky was not present when this Order was approved, but had previously indicated his disapproval.

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Atomic Safety and Licensing Appeal Boards Issuances

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Vice Chairman
Dr. Lawrence R. Quarles
Dr. W. Reed Johnson
Thomas S. Moore
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Stephen F. Eilperin
Gary J. Edles
Dr. Reginald L. Gotchy
Howard A. Wilber

APPEAL BOARDS

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Eilperin, Chairman
Gary J. Edles
Howard A. Wilber

In the Matter of **Docket Nos. 50-416**
50-417

MISSISSIPPI POWER & LIGHT
COMPANY, *et al.*
(Grand Gulf Nuclear Station,
Units 1 and 2) **December 8, 1982**

The Appeal Board affirms, subject to the outcome of pending judicial proceedings, the Licensing Board's decision (LBP-82-92, 16 NRC 1376 (1982)) denying a late-filed petition to intervene in this otherwise uncontested operating license proceeding for failure to meet the late intervention criteria of 10 CFR §2.714(a).

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS

Absent a showing of good cause for late filing, an intervention petitioner must make a "compelling showing" on the other four factors stated in 10 CFR §2.714(a) governing late intervention. *South Carolina Electric and Gas Company, et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 886 (1981), *aff'd sub nom. Fairfield United Action* v. *Nuclear Regulatory Commission*, 679 F.2d 261 (D.C. Cir. 1982). A licensing board's evaluation of those factors will not be disturbed by an appeal board unless the licensing board has abused its discretion. *Id.* at 885.

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS (ASSISTANCE IN DEVELOPING A SOUND RECORD)

When an intervention petitioner addresses the 10 CFR §2.714(a)(iii) criterion for late intervention requiring a showing how its participation may reasonably be expected to assist in developing a sound record, it should set out with as much particularity as possible the precise issues it plans to cover, identify its prospective witnesses, and summarize their proposed testimony. See generally *Summer*, *supra*, 13 NRC at 894; *The Detroit Edison Company* (Greenwood Energy Center, Units 2 and 3), ALAB-476, 7 NRC 759, 764 (1978). Vague assertions regarding petitioner's ability or resources are insufficient.

ADMINISTRATIVE TRIBUNALS: CONSIDERATION OF COMMISSION POLICY STATEMENT

A Commission policy statement is binding on its adjudicatory boards. *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 51 (1978), *remanded on other grounds sub nom. Minnesota* v. *Nuclear Regulatory Commission*, 602 F.2d 412 (D.C. Cir. 1979).

APPEARANCES

William J. Guste, Jr., and **Ian Douglas Lindsey**, Baton Rouge, Louisiana, for the petitioner, the State of Louisiana.

Troy B. Conner, Jr., **Mark J. Wetterhahn**, and **Robert M. Rader**, Washington, D.C., for the applicants, Mississippi Power & Light Company, *et al*.

Richard J. Rawson for the Nuclear Regulatory Commission staff.

DECISION

This is an appeal by the State of Louisiana from a Licensing Board decision that denied the State's late-filed petition to intervene in the otherwise uncontested Grand Gulf operating license proceeding because it failed to meet the criteria of 10

CFR §2.714(a).[1] See LBP-82-92, 16 NRC 1376 (1982). The State filed its petition on July 21, 1982 following issuance of a low power operating license for Grand Gulf, Unit 1.[2] The State of Louisiana seeks to raise issues regarding the environmental impact of the nuclear fuel cycle. According to the State, a recent court of appeals decision ruled that those issues had been wrongly excluded from individual Nuclear Regulatory Commission licensing proceedings. See *Natural Resources Defense Council, Inc.* v. *Nuclear Regulatory Commission*, 685 F.2d 459 (D.C. Cir. 1982), *cert. granted*, 51 U.S.L.W. 3419 (Nov. 29, 1982) (No. 82-545, 1982 Term) (S-3 decision). That recent court decision, we are told, provides good cause for late intervention.

As we detail below, most of the issues the State seeks to raise were in fact litigable when this operating license proceeding was first noticed for hearing more than four years ago. As to these matters, the State plainly has not prevailed under the Commission's late-filed intervention criteria. With regard to the one subject that the State could not have raised earlier (because it was covered by a generic rule) — the *amount* of effluents released annually by fuel cycle activities supporting a typical light water nuclear reactor — a recent Commission policy statement instructs its adjudicatory boards to treat ongoing licensing proceedings as if the rule that set out those values were still in effect. Statement of Policy, "Licensing and Regulatory Policy and Procedures for Environmental Protection; Uranium Fuel Cycle Impacts," 47 *Fed. Reg.* 50591 (Nov. 8, 1982) (S-3 policy statement). Consequently, we affirm the Licensing Board's rejection of the State's intervention petition (with one modification required by the S-3 policy statement) for failure to meet Commission late-filing requirements, and on the basis of the Commission's recent policy statement.

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[1] In resolving the question whether a late-filed intervention petition should be granted, 10 CFR §2.714(a) mandates that five factors be balanced:

(i) Good cause, if any, for failure to file on time.
(ii) The availability of other means whereby the petitioner's interest will be protected.
(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
(iv) The extent to which the petitioner's interest will be represented by existing parties.
(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

[2] The Director of Nuclear Reactor Regulation issued this license on June 16, 1982. Applicants argue that the issuance of that license divested the Licensing Board of jurisdiction to consider the State's petition. However, 10 CFR §2.717(a) provides that the Board's jurisdiction continues until "the expiration of the period within which the Commission may direct that the record be certified to it for final decision, or when the Commission renders a final decision . . . whichever is earliest." We agree with the Licensing Board that, until the Commission exercises its authority to license full power operation, the adjudicatory boards have jurisdiction to resolve all issues before them. LBP-82-92, *supra*, 16 NRC at 1379-81.

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I.

In order to understand our disposition of the State's appeal, some background on the reason for, and history of, the Commission's consideration of the environmental impact of the nuclear fuel cycle is required. We draw, in part, upon the Commission's Statement of Consideration in promulgating the final S-3 rule:[3]

> The National Environmental Policy Act of 1969 (NEPA) [42 U.S.C. §4321] requires that the Commission look closely at the environmental impact of a proposed nuclear power reactor before it may license the construction or operation of the facility. . . . The environmental impact of operating a nuclear power reactor is not limited to effects specific to the plant itself, such as site alterations due to plant construction or the release of reactor effluents. The environment will also be affected by the fuel cycle activities necessary to support plant operation. Since operation of a nuclear plant involves a commitment to prepare fuel and dispose of spent fuel and waste, the environmental impacts considered in the NEPA analysis for a power reactor should include contributions from uranium fuel cycle activities.

44 *Fed. Reg.* 45362, 45363 (Aug. 2, 1979) (footnote omitted). Because the fuel for a particular reactor cannot be identified at the start of the fuel cycle and traced through the various steps to final disposal, the fuel cycle impacts for a particular reactor must be estimated hypothetically. Moreover, given the wide-ranging inquiry necessary to evaluate the impacts, it is preferable to attempt this assessment generically rather than through individual licensing proceedings. *Ibid.*

The Commission turned to that task in 1974. The S-3 rule it promulgated quantified the natural resources used and effluents released annually by fuel cycle activities supporting a typical nuclear power plant. The rule stated that in individual licensing proceedings the environmental impact from a proposed reactor should be as set out in Table S-3, and that "[n]o further discussion of such environmental effects shall be required." 39 *Fed. Reg.* 14188, 14191 (Apr. 22, 1974).

While the S-3 rule underwent judicial challenge[4] it also underwent a series of revisions. In March 1977, after extensive further analysis, the NRC promulgated a new ("interim") S-3 rule that differed only slightly from the original rule. 42 *Fed. Reg.* 13803, 13806-07 (Mar. 14, 1977). A year later the interim rule was amended

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[3] The S-3 rule is codified at 10 CFR §§51.20(e) and 51.23(c). It was denominated the S-3 rule because the values specified in the rule are set out in a table labeled S-3.

[4] The U.S. Court of Appeals for the District of Columbia Circuit invalidated a portion of the original rule because of perceived inadequacies in the rulemaking procedures. It, in turn, was reversed by the Supreme Court. *Natural Resources Defense Council, Inc.* v. *Nuclear Regulatory Commission*, 547 F.2d 633 (D.C. Cir. 1976), *rev'd sub nom. Vermont Yankee Nuclear Power Corp.* v. *Natural Resources Defense Council, Inc.*, 435 U.S. 519, 548-49 (1978).

to provide specifically and unambiguously that the health effects attributable to the impacts specified in S-3 were not covered by the rule and could be litigated in individual licensing proceedings. 43 *Fed. Reg.* 15613, 15616-17 (Apr. 14, 1978). After still further rulemaking proceedings, a final S-3 rule — again, differing little from its earlier versions — was issued. The final rule, together with the original and interim rules were all challenged in court, and it is the resulting decision upon which the State of Louisiana relies to establish good cause for its late filing. See p. 1727, *supra*.[5]

Beyond its assertion of good cause for late filing, the State claimed that (1) its participation is necessary to assure that adequate consideration is given to the environmental impact of fuel cycle activities, (2) there is no basis to assume that high-level radioactive wastes will have no environmental effect after burial (if in fact they are buried), and (3) there is a need to consider on a case-by-case basis the health, socioeconomic and cumulative effects of the projected releases from high-level wastes. Petition to Intervene (July 21, 1982) at 3-5. The NRC staff and applicants opposed the State's petition pointing to, among other things, its extreme lateness and the asserted absence of good cause for the late filing. The Licensing Board generally agreed with the position taken by the staff and applicants, and denied the State's petition. LBP-82-92, *supra*, 16 NRC at 1382-84, 1386. This appeal followed.

II.

In its recent S-3 decision the District of Columbia Circuit ruled that all three S-3 rules — original, interim, and final — were invalid "due to their failure to allow for proper consideration of the uncertainties that underlie the assumption that solidified high-level and transuranic wastes will not affect the environment once they are sealed in a permanent repository." 685 F.2d at 494. The court also ruled that the original and interim rules had wrongly excluded consideration of the health, socioeconomic and cumulative effects of the releases projected in Table S-3. *Id.* at 486-90. These latter deficiencies, however, were cured according to the court by the Commission's amendment of the interim rule in April 1978, which allowed health, socioeconomic and cumulative effect issues to be considered by individual licensing boards. *Id.* at 487-88, 490.

As is plain from the District of Columbia Circuit's S-3 decision, the State of Louisiana was at no time during the course of this operating license proceeding precluded from questioning the health, socioeconomic and cumulative environmental impacts of projected releases from high-level nuclear wastes. At least since

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[5] The 30-day notice of opportunity for interested persons to file petitions for leave to intervene was published on July 28, 1978. 43 *Fed. Reg.* 32903. Thus the State's July 21, 1982 intervention petition was filed almost four years out of time.

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April 1978, when the Commission amended its S-3 interim rule — almost four months before petitions for intervention were due in this proceeding — these subjects were ripe for litigation in individual licensing proceedings.[6] Only the numerical quantification of the projected releases was generically fixed, and hence not litigable in individual licensing proceedings. Thus, as to health, socioeconomic and cumulative impacts the State cannot rely upon the court's recent decision as good cause for its late filing.

That being so, the State has an exceedingly heavy burden to justify an intervention petition on those latter issues filed four years out-of-time and after license issuance. It must make a "compelling showing" on the other four factors governing late intervention.[7] *South Carolina Electric and Gas Company, et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 886 (1981), *aff'd sub nom. Fairfield United Action* v. *Nuclear Regulatory Commission*, 679 F.2d 261 (D.C. Cir. 1982). And a licensing board's evaluation of those factors will not be disturbed by us unless the board has abused its discretion. *Id.* at 885.

Here, the Licensing Board's denial of the State's intervention petition was well within its discretion. Extended discussion on our part is not warranted. In addition to the importance of the "good cause" factor and the absence of such a showing here, we have previously pointed to the importance of the third and fifth factors specified in 10 CFR §2.714(a) — the extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record, broaden the issues or delay the proceeding. As to developing a sound record, suffice it to say that we agree with the Licensing Board that the State failed to demonstrate that it has special expertise on the general subjects it seeks to raise. See LBP-82-92, *supra*, 16 NRC at 1383. When a petitioner addresses this criterion it should set out with as much particularity as possible the precise issues it plans to cover, identify its prospective witnesses, and summarize their proposed testimony. See generally *Summer, supra*, 13 NRC at 894; *The Detroit Edison Company* (Greenwood Energy Center, Units 2 and 3), ALAB-476, 7 NRC 759, 764 (1978). Vague assertions regarding petitioner's ability or resources, as we have here, are insufficient.

So too, it is manifest to us that the grant of an intervention petition at this very late hour, after the Director of Nuclear Reactor Regulation has issued a low power operating license in an uncontested proceeding, will perforce broaden the now non-existent adjudicatory issues and delay conclusion of the proceeding. The remaining factors of adequacy of existing representation and availability of other

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[6] The Commission has taken the position that these subjects were never precluded from litigation in individual licensing proceedings, and that throughout, the S-3 rule only precluded case-by-case litigation of the numerical quantification of projected releases. See S-3 decision, *supra*, 685 F.2d at 488. This dispute between the court and the Commission is irrelevant for our purposes because the amendment to the interim rule antedated this operating license proceeding.

[7] See n.1, *supra*.

means to protect petitioner's interest, while weighing in the State's favor, are in this circumstance of decidedly "lesser weight than the other factors." *Summer, supra,* 13 NRC at 895.

With regard to the one subject the State was precluded from litigating by virtue of the S-3 rule — the numerical quantification of effluent releases and its embodiment of the judgment that high-level radioactive waste will be disposed of safely — the policy statement recently issued by the Commission with regard to the District of Columbia Circuit's S-3 decision (see p. 1727, *supra*) controls our course.[8] The policy statement addresses the question whether the subject matter of the S-3 rule should now be the subject of litigation in individual licensing proceedings, as the State asks be done here. The answer the Commission has given is plainly in the negative (47 *Fed. Reg.* at 50592 (footnote omitted)):

> To move further toward case-by-case litigation would reintroduce the significant burdens the rule was intended to relieve. Use of the S-3 rule has served the important purpose of providing the underlying basis for consideration of fuel cycle impacts, and the Commission believes that an attempt to proceed without the rule would probably prove unworkable. In principle, and quite possibly in practice, contested licensing cases could rapidly evolve into replays of the S-3 rulemaking. The resulting delay and drain on staff resources would be substantial, and would not only delay licensing of qualified facilities, but would also substantially disrupt the Commission's regulatory program, including its program to develop safety standards for high-level waste disposal facilities.

That guidance of the Commission leaves no room for doubt that the question of safe waste disposal as reflected in the S-3 table of effluent releases is not a matter

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[8] Among other things the Commission explained that the court's decision (47 *Fed. Reg.* at 50592 (footnote omitted))

> does not call into question the Commission's awareness of waste disposal uncertainties or the adequacy of the evidence regarding uncertainties in the record on which the Commission relied. The state of the Final rulemaking record does not suggest that supplementary studies of uncertainties are likely to produce evidence that would change licensing decisions. The Commission continues to address the uncertainty over whether and when a permanent repository, or equivalent system of disposal, will be developed. The Commission has stated that it would not license plants without reasonable confidence that safe waste disposal will be available when needed, and has found that it has such reasonable confidence. 42 *Fed. Reg.* 34391 (July 5, 1977), *NRDC* v. *NRC*, 581 F.2d 166 (2d Cir. 1978). The Commission is now entering the final stages of the so-called "waste confidence" proceeding, a proceeding designed to reassess whether there is reasonable assurance that safe waste disposal will be available when needed. 44 *Fed. Reg.* 61372 (1979). The Court of Appeals has made clear that licensing need not be suspended pending the outcome of this reassessment. *See Potomac Alliance* v. *NRC*, [682 F.2d 1030 (D.C. Cir. 1982)]. In view of these considerations and the high cost of delaying the issuance of licenses for qualified facilities, the Commission concludes that power reactor licensing may continue. Should the "waste confidence" proceeding arrive at an outcome inconsistent with this policy judgment, the Commission will immediately inform the Congress and will reassess the positions taken in this policy statement.

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for case-by-case litigation in individual reactor licensing proceedings at this time.[9] Indeed, the boards are explicitly directed to "proceed in continued reliance on the Final S-3 rule." 47 *Fed. Reg.* 50593. In short, the policy statement calls upon us to act as if the District of Columbia Circuit's decision, which is now under review by the Supreme Court, is currently of no operative effect.[10]

The statement, however, directs the Commission's adjudicatory boards to condition their decisions and license authorizations on the final outcome of the judicial proceedings. *Ibid.* Accordingly, we so condition our decision, and the license authorization, in this case. The Licensing Board's October 20, 1982 decision denying the State of Louisiana's intervention petition is *affirmed*, subject to the final outcome of the judicial proceedings now before the Supreme Court in *Nuclear Regulatory Commission* v. *Natural Resources Defense Council, Inc.* (No. 82-545, 1982 Term), *supra*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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[9] A Commission policy statement is, of course, binding on its adjudicatory boards. *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 51 (1978), *remanded on other grounds sub nom. Minnesota* v. *Nuclear Regulatory Commission*, 602 F.2d 412 (D.C. Cir. 1979).

[10] The District of Columbia Circuit has, in fact, stayed its mandate. See 47 *Fed. Reg.* at 50591.

Cite as 16 NRC 1733 (1982) **ALAB-705**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Reginald L. Gotchy

In the Matter of **Docket No. 50-289**
(Environmental Issues)

METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island Nuclear
Station, Unit No. 1) **December 10, 1982**

The Appeal Board affirms the Licensing Board's rejection in its partial initial decision on environmental issues in the TMI-1 restart proceeding (LBP-81-60, 14 NRC 1724), of an intervenor's contention calling for an analysis of the environmental effects of so-called "Class 9 accidents." The Appeal Board rules that neither NEPA, nor Commission policy or instructions applicable to this proceeding, requires further analysis of such accidents.

NEPA: NEED FOR ENVIRONMENTAL REVIEW

It is well-settled that NEPA does not require an evaluation of environmental impacts that are "deemed only remote and speculative possibilities." *Vermont Yankee Nuclear Power Corp.* v. *National Resources Defense Council,* 435 U.S. 519, 551 (1978), quoting *NRDC* v. *Morton,* 458 F.2d 827, 837-38 (D.C. Cir. 1972).

APPEARANCES

Thomas A. Baxter, Washington, D.C. (with whom **George F. Trowbridge, Robert E. Zahler,** and **Delissa A. Ridgway** were on the brief), for Metropolitan Edison Co., *et al.*, licensees.

Ellyn R. Weiss, Washington, D.C., for the Union of Concerned Scientists, intervenor.

James M. Cutchin, IV (with whom **Joseph R. Gray, Jack R. Goldberg,** and **Mary E. Wagner** were on the brief) for the Nuclear Regulatory Commission staff.

DECISION

OPINION OF THE BOARD BY DRS. BUCK AND GOTCHY

Now before us is an appeal by the Union of Concerned Scientists (UCS) from the Licensing Board's partial initial decision on environmental issues in the TMI-1 restart proceeding. LBP-81-60, 14 NRC 1724 (1981).[1] That appeal is addressed exclusively to the Licensing Board's rejection of UCS Contention 20, which called for an analysis of the environmental effects of so-called "Class 9 accidents."[2] *Id*. at

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[1] UCS is the only party that has appealed any aspect of the Licensing Board's separate partial initial decision on environmental issues. LBP-81-60, *supra*, 14 NRC 1724. UCS briefed and argued this appeal together with its appeal from the Licensing Board's partial initial decision in the design phase of this proceeding. LBP-81-59, 14 NRC 1211 (1981). Our review of that decision is currently under way. Also pending are appeals from the Board's two partial initial decisions on management competence. LBP-81-32, 14 NRC 381 (1981); LBP-82-56, 16 NRC 281 (1982). Our decisions on emergency planning issues were announced earlier. ALAB-697, 16 NRC 1265 (1982); ALAB-698, 16 NRC 1290 (1982).

[2] UCS Contention 20 states:

> Neither Metropolitan Edison nor the NRC staff has presented an accurate assessment of the risks posed by operation of Three Mile Island, Unit 1, contrary to the requirements of 10 CFR 51.20(a) and 51.20(d). The decision to issue the operating license did not consider the consequences of so-called Class 9 accidents, particularly core meltdown with breach of containment. These accidents were *deemed* to have a low probability of occurrence. The Reactor Safety Study, WASH-1400, was an attempt to demonstrate that the *actual* risk from Class 9 accidents is very low. However, the Commission has stated that it "does not regard as reliable the Reactor Safety Study's numerical estimate of the overall risk of reactor accidents." (NRC Statement of Risk Assessment and the Reactor Safety Study Report (WASH-1400) in Light of the Risk Assessment Review Group Report, January 18, 1979). The withdrawal of NRC's endorsement of the Reactor Safety Study and its findings leaves no technical basis for concluding that the actual risk is low enough to justify operation of Three Mile Island, Unit 1.

Final Contentions of the Union of Concerned Scientists (October 22, 1979) at 10-11. Although the contention does not mention the National Environmental Policy Act (NEPA) or otherwise call for an

(Continued)

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1731. The issue presented is a narrow one that can readily be decided apart from the other questions still before us. See note 1, *supra*. For this reason, we reach it now in this separate decision. For the reasons discussed below, we hold that no such environmental analysis is required and thus affirm the Licensing Board's decision.

I. BACKGROUND

A. The Commission has explained the origin and meaning of the "Class 9 accident" concept as follows:

> The term "Class 9 accidents" stems from a 1971 AEC [Atomic Energy Commission] proposal to place nuclear power plant accidents in nine categories to take account of such accidents in preparing environmental impact statements. That proposal was put forward for comment in a proposed "Annex" to the Commission's regulations implementing NEPA. 36 *Fed. Reg.* 22851-52 (December 1, 1971). The nine categories in that "Annex" were listed in increasing order of severity. "Class 9" accidents involve sequences of postulated successive failure more severe than those postulated for the design basis of protective systems and engineered safety features. The Annex concluded that, although the consequences of Class 9 accidents might be severe, the likelihood of such an accident was so small that nuclear power plants need not be designed to mitigate their consequences, and, as a result, discussion of such accidents in applicants' Environmental Reports or in staff's environmental impact statements was not required. The Annex specifically referred to the "defense in depth" concept, the Commission's quality control system, its inspection program, and its general requirement of design conservatism. 36 *Fed. Reg.* at 22852. When the Annex was published the Commission directed that it be followed as "interim guidance" until the Commission took further action. When the Commission revised and recodified its environmental regulations in 1974, the Annex's status as a proposal and "interim guidance" was not changed, the Commission merely noting that it was "still under consideration."

Offshore Power Systems (Floating Nuclear Power Plants), CLI-79-9, 10 NRC 257, 258-59 (1979) (footnotes omitted).

Environmental Impact Statement (EIS), the Licensing Board treated it as raising such issues by implication. See LBP-79-34, 10 NRC 828, 839 (1979). This was in accordance with the interpretation expressed by counsel for UCS at the prehearing conference and in various pleadings. See, *e.g.*, Tr. 378-79 (Weiss) and UCS Reply Brief on the Application of the National Environmental Policy Act (November 30, 1979).

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Although the Commission never formally adopted the Annex, its guidance was followed by the NRC staff and the adjudicatory boards[3] and withstood challenge in the courts.[4] Then, on September 14, 1979 the Commission approved in *Offshore Power Systems* the inclusion of a Class 9 accident analysis in the environmental impact statement (EIS) prepared by the staff in connection with an application for a license to manufacture floating nuclear power plants.[5] At the same time, the Commission announced its intention to reexamine the existing policy by completing the rulemaking begun with the proposed Annex. In the interim, the staff was to bring to the Commission's attention any individual cases in which an environmental analysis of Class 9 accidents was warranted.[6]

On June 13, 1980, the Commission published a Statement of Interim Policy on "Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969." 45 *Fed. Reg.* 40, 101 (hereinafter referred to as the June 13, 1980 policy statement). In it, the Commission announced that it was revising its policy regarding the consideration, in environmental impact statements required by NEPA, of "the more severe kinds of very low probability accidents that are physically possible" — *i.e.*, those "commonly referred to as Class 9 accidents." *Id.* The Commission explained that the TMI-2 accident "has emphasized the need for changes in NRC policies regarding the consideration to be given to serious accidents from an environmental as well as a safety point of view." It therefore withdrew the proposed Annex containing the old policy and instructed the staff to examine, in ongoing and future environmental reviews, both the probability and the environmental consequences of "accident sequences that lead to releases of radiation and/or radioactive materials, including sequences that can result in inadequate cooling of reactor fuel and to melting of the reactor core." *Id.* It defined "ongoing NEPA reviews" as those "for any proceeding at a licensing stage where a Final Environmental Impact Statement [FES] has not yet been issued." *Id.* at 40,103.

The Commission also mentioned several completed environmental reviews in which the staff had already considered Class 9 accidents because of the "special

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[3] See the decisions cited in *Offshore Power Systems* (Floating Nuclear Power Plants), ALAB-489, 8 NRC 194, 210 n.52 (1978). We certified a question decided in that opinion to the Commission in ALAB-500, 8 NRC 323 (1978). The Commission's decision on certification is CLI-79-9, *supra*.

[4] See, *e.g.*, *Porter County Chapter of the Izaak Walton League* v. *AEC*, 533 F.2d 1011 (7th Cir.), *cert. denied*, 429 U.S. 858 (1976); *Carolina Environmental Study Group* v. *United States*, 510 F.2d 796 (D.C. Cir. 1976).

[5] CLI-79-9, *supra*, 10 NRC at 261.

[6] *Id.* at 262. The Commission again addressed the issue of Class 9 accidents in *Black Fox*, where it explained that the staff had discretion to bring individual cases to the Commission. Such discretion was not to be exercised, however, "without reference to existing staff guidance on the type of *exceptional* case that *might* warrant additional consideration; higher population density, proximity to man-made or natural hazard, unusual site configuration, unusual design features, etc., *i.e.*, circumstances where the environmental risk from such an accident, if one occurred, would be substantially greater than that for an average plant." *Public Service Company of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), CLI-80-8, 11 NRC 433, 434-35 (1980).

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circumstances" present in those cases: namely, the special risks to the public health and safety posed by the Clinch River Breeder Reactor (unique design), the Perryman facility (high population density surrounding the proposed facility), and *Offshore Power Systems* (water pathways from floating nuclear plants leading to potential radiological impact on water biota and humans). *Id.* at 40,102.[7] It stated that its "change in policy [was] not to be construed as any lack of confidence in conclusions regarding the environmental risks of accidents expressed in any previously issued Statements, nor, absent a showing of similar special circumstances, as a basis for opening, reopening, or expanding any previous or ongoing proceeding." *Id.* at 40,103 (footnote omitted).

B. Early in this proceeding, UCS urged that an EIS on the effects of Class 9 accidents was required prior to restart. At the November 9, 1979 prehearing conference, the staff reiterated its position that no environmental analysis was required for the restart of TMI-1[8] but announced its intention to prepare, as a matter of discretion, an environmental impact appraisal (EIA). Tr. 373-74.[9] The staff also indicated at that time that it expected to receive some guidance on the subject of Class 9 accidents as a result of the Commission's then ongoing rulemaking. Tr. 384-85.

In a prehearing conference order issued on December 18, 1979, the Licensing Board ruled that those "contentions which use the actual events at TMI as a base and then add or change a credible specific occurrence or circumstance, [do] set forth sufficiently specific accidents which have a close nexus to the TMI accident." LBP-79-34, 10 NRC 828, 834 (1979). The Board rejected UCS Contention 20 as "too vague and unfounded," but specifically reserved for later resolution the issue of the need for an EIS. *Id.* at 839. Then, on March 12, 1980, the Board announced that it would defer ruling on contentions calling for an EIS until after the staff had issued its EIA. The evidentiary hearing in the TMI-1 restart proceeding began on October 15, 1980, but the staff did not issue its EIA until March 27, 1981.

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[7] Significantly, all three examples involved environmental reviews that were conducted prior to the grant of a construction permit or manufacturing license.

[8] See Brief of NRC Staff on Psychological Distress Issues (October 31, 1979) at 8-9. Basically, the staff's position at that time was that no further environmental analysis was required for TMI-1 restart because (1) as an enforcement proceeding, it was exempt from NEPA; (2) restart did not constitute a major federal action significantly affecting the environment; and (3) a legally sufficient EIS had already been prepared in 1972 and there were no newly discovered environmental impacts sufficient to trigger the need for a supplemental EIS. The U.S. Court of Appeals for the District of Columbia Circuit rejected the first of these justifications in *People Against Nuclear Energy* v. *NRC*, 678 F.2d 222, 231 n.14 (D.C. Cir. 1982), but it remanded the record to the Commission for a "study of potential psychological health effects and for a decision whether a supplemental EIS is necessary." *Id.* at 249. The Supreme Court recently granted the petitions for a writ of certiorari in that case. See *Metro Ed.* v. *PANE*, 51 U.S.L.W. 3339 (U.S. Nov. 2, 1982) (No. 81-2399).

[9] Under the Commission's NEPA regulations, an EIA is prepared in connection with any declaration by the agency (*i.e.*, a negative declaration) that a particular licensing or regulatory action need not be accompanied by an environmental impact statement. The EIA is required to include a summary description of the probable impacts of the proposed action on the environment and the basis for the conclusion that no environmental impact statement need be prepared. The EIA is available to the public. 10 CFR 51.7(b).

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Soon thereafter, several intervenors filed comments on the adequacy of the EIA. In response, the staff issued a supplemental EIA on May 11, 1981. UCS, however, filed no comments on either document. Finding "that the only NEPA matters in controversy [were] legal contentions that there has been a failure to comply with NEPA and [the Commission's environmental regulations]," the Licensing Board approved the adequacy of the EIA and rejected all contentions calling for an EIS.[10]

In that decision, the Licensing Board expressed doubt that the Commission had intended to include the authority to consider the need for and content of an EIS as part of its delegation to the adjudicatory boards. But because the parties had recommended that it rule on the NEPA issues, and because 10 CFR 51.52 at least arguably authorized it to do so, the Board proceeded to rule on the NEPA contentions. The Licensing Board rejected UCS Contention 20 because, insofar as it called for an evaluation of all Class 9 accidents, it lacked the requisite nexus to the TMI-2 accident. With regard to the June 13, 1980 policy statement, the Board also noted that it was uncertain whether the new policy, calling for consideration of Class 9 accidents in certain circumstances, applied to TMI-1 restart. It held, however, that "if the new policy does not apply, the EIA as supplemented by the hearing record and [its] Partial Initial Decision, contains an adequate evaluation of Class 9 accidents."[11]

UCS maintains on appeal that the Licensing Board erred in its approach. First, UCS argues that NEPA requires the Commission "to prepare, circulate and consider an EIS" on the environmental impacts of Class 9 accidents prior to restart. UCS points out that the statutory obligation to comply with NEPA does not depend on "any explicit delegation from the Commission" and that the applicability of NEPA to the restart proceeding has been "implicitly decided" in the affirmative in *PANE* v. *NRC*, note 8, *supra*. UCS then argues that the TMI-2 accident "demonstrated that Class 9 accidents are a credible event and therefore 'reasonably foreseeable' at TMI-1." According to UCS, NEPA therefore requires consideration of such accidents in a supplemental EIS.[12]

With regard to the Commission's policy statement, UCS maintains that the Licensing Board misapplied the Commission's instructions in this proceeding.[13] UCS argues that its Contention 20 was timely raised at the beginning of the proceeding, before the staff began preparation of its EIA. UCS concludes that TMI-1 restart is not a case involving the reopening of a prior proceeding or environmental review.[14]

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[10] LBP-81-60, *supra*, 14 NRC at 1728.

[11] *Id.* at 1732.

[12] Union of Concerned Scientists' Brief on Exceptions to the Partial Initial Decision of December 14, 1981 (March 12, 1982) at 63.

[13] *Id.* at 63-64. UCS also maintains that the policy statement is an incorrect statement of NEPA law. We need not reach that question in this case and, in any event, would be bound by the Commission's statement of policy.

[14] *Id.* at 64.

In contrast, the licensee's position is that "Class 9 accidents had been considered [*i.e.*, properly disregarded] in the initial operating license proceeding for TMI-1 under the guidance then provided by the Commission, and that under present guidance from the Commission no further EIS need be prepared on the subject."[15] The licensee recognizes, however, that the Licensing Board declined to base its ruling on that ground. Accordingly, the licensee supports the Board's decision by making the following three arguments. First, "UCS made no attempt to bring its contention within the ambit of accidents having a nexus to the TMI-2 accident." Second, "no party presented any factual basis for assessing the impact of a Class 9 accident having a nexus to the TMI-2 accident." Third, "the staff had an adequate basis for treating as 'incredible' those Class 9 accidents with a nexus to the TMI-2 accident"; the EIA as supplemented by the hearing record and the Board's decision therefore contains an adequate evaluation of Class 9 accidents. In short, there is, in the licensee's view, "ample evidence on which to conclude that the impacts of Class 9 accidents having a nexus to the TMI-2 accident need not be considered."[16]

Similarly, the staff agrees that NEPA does not require consideration of Class 9 accidents in this proceeding. The staff argues that, even assuming that the restart proceeding comes within the scope of the Commission's policy statement, an analysis of Class 9 accidents nevertheless is not required here. In the staff's view, the new policy on its face covers only those "proceedings at a licensing stage where a Final Environmental Impact Statement has not yet been issued," unless special circumstances can be shown. Because (1) TMI-1 restart is not a licensing proceeding, (2) the FES for Unit 1 has already been issued, and (3) the case presents no special circumstances of the type mentioned in the policy statement, the staff concludes that no Class 9 analysis is required.[17]

In the alternative, the staff supports the Licensing Board's ruling that, in any event, the EIA as supplemented by the hearing record and the Board's decision contains an adequate evaluation of Class 9 accidents. The staff points out that Class 9 accidents need not be considered under NEPA, citing those court cases in which the Commission's previous policy was upheld. See note 4, *supra*. It then argues that the record clearly demonstrates that Class 9 accidents with a nexus to the TMI-2 accident are no longer credible and, accordingly, a NEPA review is not required.[18] Finally, the staff urges that UCS Contention 20 lacks the necessary specificity and was properly rejected on that ground.[19]

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[15] Licensee's Brief in Opposition to the Exceptions of Other Parties to the Atomic Safety and Licensing Board's Partial Initial Decision on Plant Design and Procedures, Separation, and Emergency Planning Issues (May 10, 1982) at 122.

[16] *Id.* at 124.

[17] See NRC Staff's Brief in Response to the Exceptions of Others to the Atomic Safety and Licensing Board's Partial Initial Decision on Plant Design and Procedures, Separation, and Emergency Planning Issues (May 20, 1982) at 95, 97-99.

[18] *Id.* at 99-103.

[19] *Id.* at 103.

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II. ANALYSIS

As we explain more fully below, we believe the Licensing Board correctly ruled that, contrary to UCS Contention 20, no further analysis of Class 9 accidents is required prior to restart. Assuming for the sake of argument that the Commission's June 13, 1980 policy statement is applicable to this proceeding, under the terms of that statement no Class 9 accident analysis need be performed here. Moreover, NEPA does not require such an analysis.

A. The Commission's Policy Statement

As discussed above (pp. 1736-37, *supra*), the Commission's June 13, 1980 policy statement withdrew the proposed Annex containing the prior policy, abolished the former accident classification scheme, and directed that, henceforth, a broad spectrum of accidents be considered in ongoing and future NEPA reviews. The statement makes clear that the new approach is to be employed in ongoing licensing proceedings only if an FES for the facility has not yet been issued, unless special circumstances similar to the examples given are shown. The FES for TMI-1 has long been completed. Moreover, the policy statement speaks only in terms of environmental impact statements prepared in connection with licensing proceedings. See p. 1736, *supra*. This is a discretionary, special proceeding to which the policy statement simply does not apply.

Our dissenting colleague nevertheless concludes that the TMI-1 restart proceeding comes within the terms of the policy statement, relying in part on the Commission's decision in *Indian Point*.[20] That discretionary, special proceeding is now under way to consider whether the risk presented by operation of Indian Point Units 2 and 3 is acceptable in view of the very high population density surrounding the site, taking into account various safety and emergency preparedness improvements.[21] In that decision, the Commission concluded that, although no EIS was required, a review of the risk of serious accidents at those units should be conducted consistent with the guidance provided in the policy statement.[22] We find it significant that the Commission apparently considered it necessary to direct that such an analysis be performed. Had the Commission viewed the policy statement as already encompassing special proceedings such as *Indian Point*, there manifestly would have been no need for that directive.

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[20] See *Consolidated Edison Company of New York* (Indian Point, Unit 2), CLI-81-23, 14 NRC 610 (1981).

[21] See *Consolidated Edison Company of New York, Inc.* (Indian Point, Unit 2), CLI-81-1, 13 NRC 1 (1981).

[22] CLI-81-23, *supra*, 14 NRC at 612.

Assuming *arguendo* that the policy statement can be interpreted to apply to discretionary, special proceedings, it does not require that an analysis of serious accidents be performed in this particular case. The policy statement lists several examples in which Class 9 accident analyses were performed and directs such reviews where "similar special circumstances" are shown. Those examples suggest that there must be either some special or unique reactor design or a genuine difference in potential consequences of an accident. Contrary to the views expressed by our dissenting colleague, neither circumstance is present here.

Both UCS and our dissenting colleague presumably would have us conclude that the occurrence of the TMI-2 accident in and of itself constitutes a similar special circumstance. We do not think that the occurrence of the TMI-2 accident can properly be viewed in this manner. While the Commission expressly mentioned the TMI-2 accident as one of the reasons for its change in policy, at the same time it cautioned that its change in policy was not to be construed as indicating any lack of confidence in its earlier environmental reviews. From this, we conclude that the Commission did not intend the occurrence of the TMI-2 accident, without more, to be considered a "similar special circumstance" so as to make prior or ongoing proceedings subject to reopening or expansion.

An implicit premise of our dissenting colleague's argument is that the TMI-2 accident was a Class 9 occurrence. The Licensing Board found that the TMI-2 sequence of events could be considered a Class 9 accident in the sense that it exceeded the design basis for the facility. It should be noted, however, that the offsite radiological consequences of that accident were not significant.[23] In contrast, the consequences of accidents formerly referred to as Class 9 were described as "severe" in the proposed Annex.

Of course, as our dissenting colleague correctly emphasizes, the TMI-2 accident raised a number of questions concerning whether TMI-1 could safely resume operation without undue risk to the public health and safety. Accordingly, the Commission determined that a hearing must be held to determine whether and under what conditions TMI-1 would be permitted to restart. The issues considered throughout this proceeding have been matters of the licensee's management capability and technical resources, the adequacy of plant design and procedures, the separation of units, and emergency preparedness. But these concerns do not constitute the type of special circumstances mentioned in the policy statement.

Furthermore, TMI-1 will not be allowed to restart unless all of these concerns are adequately resolved. Thus, any uncertainties that may have resulted from the occurrence of the TMI-2 accident either must be or have been resolved by the evidence and decisions in this case. The Licensing Board has already completed its

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[23] In the emergency planning phase of this case, we rejected intervenors' assertions that certain health effects could be attributed to the TMI-2 accident. See ALAB-697, 16 NRC 1265, 1283-88 (1982). See generally Report of the President's Commission on the Accident at Three Mile Island (October 1979) at 34-35.

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extensive review and has issued partial initial decisions on all phases of the restart proceeding. Our review is now under way, and a final review will be performed by the Commission. Such extensive scrutiny of TMI-1, together with any improvements and conditions that are required as a result, serve to make the likelihood of a Class 9 accident at TMI-1 no greater than that for other operating plants. Thus, whatever concerns may have existed at the beginning of this proceeding, they are (or, prior to restart, will be) no longer present.

Our dissenting colleague would also find special circumstances in the Commission's recent statement that TMI-area residents may be suffering from "post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe." "Consideration of Psychological Stress Issues; Policy Statement," 47 *Fed. Reg.* 31,762 (July 22, 1982). In his view, the presence of a psychologically more sensitive population is a special circumstance, much like high population density, that would serve to create special or different environmental consequences — presumably, of either routine operation or of a serious accident.

We do not believe the Commission intended to have its policy statement employed in this manner. Because the Commission is bound to follow *PANE* unless it is overturned, the statement was issued in furtherance of the circuit court's directive in that case. See note 8, *supra*. It also represents the Commission's effort to determine the applicability of that case for other proceedings. We do not believe that statement was intended to enlarge the scope of the Commission's June 13, 1980 policy statement. If the Commission finds that "significant new circumstances or information have arisen with respect to the potential psychological health effects of operating the TMI-1 facility," it will address those effects. *Id*. The Commission has not yet made that determination. Thus, even assuming that psychological stress may properly be considered a special circumstance, any Class 9 accident inquiry based on that factor is, at present, premature.

In short, there is nothing unusual about the TMI-1 reactor, site, or neighboring population, as a result of the TMI-2 accident, that would make the risk of a Class 9 accident any different from that for other operating reactors. Thus, within the meaning of the Commission's policy statement, there are no special circumstances in this case.[24]

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[24] In concluding otherwise, our dissenting colleague construes the policy statement as applying to any ongoing proceeding in which the circumstances surrounding the proposed action are "special." See pp. 1747-51, *infra*. By the specific terms of the policy statement, however, the special circumstances must be "similar" to those identified in the statement. 45 *Fed. Reg*. at 40,103. Thus, it is not enough that the circumstances giving rise to this restart proceeding may be "unique" to trigger application of the policy. The special circumstances must also be similar to those in which the environmental effects of Class 9 accidents were assessed under the earlier policy. See pp. 1736-37, *supra*.

Apart from our dissenting colleague's disregard of "similar," he apparently finds some support for his position on perceived procedural irregularities in connection with the staff's preparation of the EIA. He stresses, for example, that the staff reversed the usual procedure for issuing an EIA — that here, the

(Continued)

B. NEPA and the Nexus Requirement

In its first special prehearing conference order, the Licensing Board ruled that issues to be litigated in the restart proceeding must have a reasonable nexus to the TMI-2 accident. LBP-79-34, 10 NRC 828, 830-31 (1979). UCS was in general agreement with that approach. Tr. 133. The Board concluded that it would be "too broad and non-specific and inconsistent with still viable Commission precedent to open up this proceeding to the extent of embracing generally the litigation of unspecified Class 9 accidents." LBP-79-34, *supra*, 10 NRC at 832. As mentioned previously (p. 1737, *supra*), the Board ruled that "contentions which use the actual events at TMI as a base and then add or change a credible specific occurrence or circumstance, [do] set forth sufficiently specific accidents which have a close nexus to the TMI[-2] accident." *Id.* at 834. The Board rejected UCS Contention 20, which called for an analysis of the environmental impacts of all Class 9 accidents, as "too vague and unfounded," but reserved for a later order the question of the need for an EIS. *Id.* at 839.

UCS never attempted to identify any specific accident sequences requiring an environmental review, as the Board's ruling required. Had it done so, we believe the Board would have admitted the contention for litigation.[25] In our view, the nexus requirement was mandated by the Commission's August 9, 1979 order and notice of hearing, in which the only issues identified for hearing had a nexus either to the specific TMI-2 accident scenario or to questions which that accident raised about whether TMI-1 could be operated safely. See CLI-79-8, 10 NRC 141 (1979). Indeed, the Commission effectively ratified the nexus requirement as applied to contentions contesting the sufficiency of the short term actions to resolve various safety concerns raised as a result of the TMI-2 accident. See the Commission's order of March 14, 1980 (unpublished).

UCS Contention 20 was nothing more than a legal proposition that a Class 9 accident analysis was required. Under that contention, there were no factual issues

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staff proceeded to prepare an EIA only after it decided first that no EIS would be issued. See note 1, *infra*. The point is irrelevant. What is significant is that no party found the EIA, as supplemented, to be inadequate, as evidenced by the absence of any challenge to it.

Our dissenting colleague also apparently finds it worth highlighting that the Licensing Board did not reexamine its earlier ruling regarding the admission of Class 9 accidents following issuance of the Commission's June 13, 1980 policy statement. See p. 1746, *infra*. Its failure to do so, however, is not crucial. We have the power to make that examination (*Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-73, 5 AEC 297, 298 (1972); *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 2), ALAB-78, 5 AEC 319, 322 (1972)) and our decision today does so.

[25] Other contentions alleging certain environmental impacts were initially admitted, although they were later withdrawn or dismissed. See, *e.g.*, LBP-81-60, *supra*, 14 NRC at 1729 n.5 and LBP-81-59, *supra*, 14 NRC at 1424-25. In addition, the monitoring of effluents from TMI-1 and measures taken to ensure against groundwater contamination at the site, clearly environmental issues, were both addressed at the hearing. As explained below, however, we conclude that NEPA does not require further analysis in any event.

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in controversy to be litigated. A full EIS covering the environmental impacts of operating TMI-1 was prepared in connection with the Unit 1 operating license proceeding. And, as noted above, the Commission's prior policy of excluding consideration of Class 9 accidents from its environmental impact statements, which governed the preparation of the FES for TMI-1, was approved by the courts.[26] This is because the environmental risk of such accidents was found to be extremely low and could, therefore, be disregarded. NEPA would require a supplemental EIS in this case only if the proposed federal action (here, the authorization of the restart of TMI-1) would present significant new environmental effects or there have been significant changes in the environmental impacts previously addressed in the FES.[27]

As we have indicated, the TMI-2 accident raised a number of questions concerning whether TMI-1 could be operated without undue risk to the public health and safety. It called into question the adequacy of earlier accident assessments to account for the risk of new scenarios involving a small break loss of coolant or a loss of main feedwater — *i.e.*, those accidents with a reasonable nexus to the TMI-2 incident. The accident did not affect the risk of all other serious accidents that have no logical connection to the TMI-2 sequence of events. Thus, we find that the nexus requirement was properly imposed for environmental purposes. Clearly, no environmental analysis of these unrelated accidents is now required.

Accidents having the requisite nexus received a great deal of attention in the design phase of the restart hearing.[28] In response to UCS Contention 13 and Board Question 2, licensee and staff witnesses presented testimony that satisfied the Licensing Board that (1) the staff's method of determining which accidents fall within the design basis is reasonable, and (2) the short and long term actions to be taken at TMI-1 are sufficient to provide reasonable assurance that the public health and safety will be protected. LBP-81-59, *supra*, 14 NRC at 1395-96.[29] After the "extensive consideration" given to Class 9 accidents in the restart proceeding, the Board "eventually was satisfied that the Staff had an adequate basis for treating as 'incredible' those Class 9 accidents with a nexus to the TMI-2 accident." LBP-81-60, *supra*, 14 NRC at 1731-32. No party has appealed that determination. It is well settled that NEPA does not require an evaluation of environmental impacts that are "deemed only remote and speculative possibilities." *Vermont Yankee Nuclear Power Corp.* v. *Natural Resources Defense Council*, 435 U.S. 519, 551 (1978) quoting *NRDC* v. *Morton*, 458 F.2d 827, 837-38 (D.C. Cir. 1972). Our review of the record on plant design and procedures is not yet complete. If restart is to be

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[26] See the cases cited in note 4, *supra*.

[27] See *PANE* v. *NRC*, *supra*, 678 F.2d at 245-47, and cases cited.

[28] The record contains a wide range of possible accident scenarios. See, *e.g.*, Jones and Broughton, fol. Tr. 5038; Tr. 5039-105 (Jones and Broughton); Lic. Exs. 3-13.

[29] See generally Levy, fol. Tr. 11,049; Rosenthal and Check, fol. Tr. 11,158.

authorized, we must be satisfied that the record contains sufficient evidence upon which to conclude that Class 9 accidents with a nexus to the TMI-2 accident are no longer credible at TMI-1. Thus, NEPA does not require a supplemental EIS for such accidents in this case.

For the foregoing reasons, the Licensing Board's rejection of UCS Contention 20 is *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

The dissent of Mr. Edles follows.

DISSENTING OPINION OF MR. EDLES

I am unable to concur in my colleagues' conclusion that the restart of TMI-1 presents no special circumstances within the meaning of the Commission's 1980 policy statement and that TMI-1 should, instead, be treated as an ordinary operating reactor.

A. Background

The majority opinion summarizes the Commission's traditional approach to so-called Class 9 accidents, the changes brought about by the 1980 policy statement, the evolution of the notion of "special circumstances," and the background of this case. With regard to that summary, there are a few points that warrant further discussion.

First, the staff made its determination that no environmental analysis was required for the TMI-1 restart proceeding on procedural grounds. The usual approach, however, is to base such a decision on the potential environmental effects of the proposed federal action.[1]

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[1] The National Environmental Policy Act (NEPA) requires that federal agencies analyze the potential effects of a proposed action in order to determine whether such effects are likely to be significant. In practice, this analysis takes the form of an environmental impact appraisal (EIA). If, after completing *(Continued)*

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Second, the Licensing Board's tentative rejection of UCS Contention 20 in the December 18, 1979 prehearing conference order was based on what it described as "still viable Commission precedent . . . ." 10 NRC at 832-35. The Licensing Board believed that such precedent prohibited the litigation of Class 9 accidents in individual licensing cases involving land-based reactors, absent a showing that a particular accident was sufficiently probable to form the basis of an admissible contention. It reasoned that the occurrence of the accident at TMI-2 constituted a *prima facie* showing of such probability of the specific TMI-2 type accident. *Id.* at 833. Although the Board recognized that it might have to reexamine its ruling regarding the admission of Class 9 contentions in light of any subsequent policy that the Commission might announce, the record does not indicate that the Board ever did so.[2]

Third, there seems to have been some delay in connection with the review of environmental issues in this proceeding. The staff took nearly one and one-half years to complete its EIA. When it was finally issued, the restart hearing was still some four months from completion. Thus, in terms of the Commission's administrative concerns regarding the reopening or expansion of ongoing proceedings, an accident evaluation of the type called for in the policy statement could have been accommodated within the established procedural framework without much additional time, effort, or delay. But the staff adhered to its position that no environmental analysis of any kind was required and, for that reason, it declared that it did

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the analysis, the agency determines that its proposed action will have no significant effects on the environment, it simply issues a negative declaration. If, on the other hand, the analysis reveals that the environment could be significantly affected, a full-scale EIS is required. In some situations it is so clear that the environment could be significantly affected that the agency automatically invokes the full-blown EIS process. See 10 CFR 51.5 and 10 CFR 51.7. See generally, *Lower Alloways Creek* v. *Public Service Electric & Gas Co.*, 687 F.2d 732 (3d Cir. 1982). In the instant case the procedure was reversed: the staff decided first that no EIS would be issued, but then proceeded to prepare an EIA. See Brief of NRC Staff on Psychological Distress Issues (October 31, 1979) at 14-29; NRC Staff Brief in Response to Contentions (October 31, 1979) at 13-14; Tr. 373-74.

[2] The most important discussion of the issue at the time of the Board's ruling was contained in *Offshore Power Systems* (Floating Nuclear Power Plants), ALAB-489, 8 NRC 194 (1978), and CLI-79-9, 10 NRC 257 (1979). In that case, the staff urged the inclusion of a Class 9 accident analysis in connection with a floating nuclear power plant. The staff argued that, despite the Commission's then-prevailing general policy against such analysis in individual cases, an evaluation of environmental risks was permissible where (i) the probability of an accident was greater than at the ordinary reactor, (ii) the consequences of an accident could be greater, or (iii) the risks were "of a different kind" than those associated with the typical reactor. 8 NRC at 210-11, and 218. The Appeal Board permitted the analysis but found it necessary to adopt only the staff's third argument. The Board nonetheless observed, by way of dictum, that it was the higher probability of an accident, not the potential for greater consequences, that was ordinarily the "triggering factor" in determining whether to examine Class 9 accidents. *Id.* at 214-18. The Board certified to the Commission the issue of whether a Class 9 analysis should be conducted with respect to the floating reactor. ALAB-500, 8 NRC 323 (1978). The Commission answered the question in the affirmative but explicitly limited its decision to offshore reactors. It expressly declined to address the issue of whether the Appeal Board correctly concluded that special circumstances must be based solely on probability. 10 NRC at 259 n.3 (1979). It also chose not to resolve the more general question of the standards to be employed in determining whether a consideration of Class 9 accidents was appropriate at land-based reactors. That issue would be, and indeed was, taken up in the June 13, 1980 policy statement. *Id.* at 262.

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not intend to introduce the EIA into evidence.[3] And the Licensing Board took no action on UCS' environmental contention until December 15, 1981, a day after it issued its decision in the design and emergency planning phases of the case, and some five months after the close of the evidentiary hearing on all matters except the reopened cheating inquiry. In that decision, the Board expressly declined to reach the key question we address here — *i.e.*, whether the restart proceeding comes within the June 13, 1980 policy statement. LBP-81-60, 14 NRC at 1732.

B. Analysis

1. Applicability of the Policy Statement

The staff and the licensee argue, and my colleagues agree, that this is not a licensing proceeding, that the FES originally prepared in connection with TMI-1 is adequate, and that, as a consequence, the policy statement is by its terms inapplicable to this case. I disagree.

The policy statement gives guidance regarding the conduct of serious accident analyses in ongoing and future NEPA reviews. Such reviews are most often undertaken in connection with construction permit or operating license proceedings. The Commission's NEPA responsibilities are not limited to those situations, however, and NEPA reviews are sometimes undertaken in other contexts. Contrary to my colleagues' assertion, the Commission did not expressly limit application of the new policy approach to licensing proceedings. I conclude, therefore, that it is up to the adjudicatory boards to construe the policy statement and to determine whether the particular circumstances at hand warrant a serious accident analysis.[4]

The Commission recently stated its intent that the new policy approach be applied in the special proceeding involving Units 2 and 3 of the Indian Point facility. *Consolidated Edison Company of New York* (Indian Point, Unit 2), CLI-81-23, 14 NRC 610, 612 (1981). Unlike my colleagues, I view the Commission's action as confirming that the new policy approach, although ordinarily intended for environmental impact statements prepared in connection with construction permit or operating license cases, is not limited to them. In my judgment, it is reasonable to conclude that whenever the Commission determines that the risks of reactor operation are sufficiently special to justify institution of a comprehensive discretionary, adjudicatory proceeding, they are, perforce, sufficiently special to warrant application of the policy statement. The circumstances at TMI, in fact, appear to be even more compelling than at Indian Point: in contrast to

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[3] See NRC Staff Response to the Commonwealth of Pennsylvania's Response to Intervenor Sholly's Motion to Reject the Staff's EIA (May 11, 1981) at 6 n.3.

[4] See *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-6, 13 NRC 443 (1981).

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TMI, the Commission had sufficient confidence in the circumstances affecting Indian Point to allow the reactor to continue to operate during the pendency of the adjudicatory hearing. See *Consolidated Edison Company of New York, Inc.* (Indian Point, Unit 2), CLI-81-1, 13 NRC 1 (1981).

Unlike the majority, I attribute no significance to the Commission's failure to invoke the policy statement affirmatively in this case. The policy statement was issued almost a year after the Commission's notice of hearing in this case, while the proceeding was pending before the Licensing Board. This case was thus in a totally different procedural posture than *Indian Point*. I am not willing to attribute the Commission's failure to intervene affirmatively in the middle of the prehearing phase to a deliberate determination that the policy statement was inapplicable to TMI-1.

2. *Special Circumstances*

The Commission's policy statement now mandates consideration of site-specific environmental impacts attributable to accident sequences that lead to releases of radiation and/or radioactive materials, including sequences that can result in inadequate cooling and eventual melting of the reactor core, for all new proceedings and selected ongoing proceedings. The environmental record in pending cases is to be reopened for such consideration, however, only where certain "special circumstances" are found.[5] I think the restart proceeding clearly presents such special circumstances and thus comes within the Commission's policy directive. As a result, I would order the staff to evaluate the environmental effects of serious accidents at TMI-1 as it now does routinely.

The policy statement does not define the term "special circumstances." The "special circumstances" notion originated in *Offshore Power Systems* (Floating Nuclear Power Plants), ALAB-489, 8 NRC 194, 209 (1978), and CLI-79-9, 10 NRC 257 (1979), where the staff argued that a discussion of Class 9 accidents was proper where circumstances indicated that Class 9 accident risks might be unusually high or of a different character than for a typical nuclear power plant. See note 2, *supra*. In the policy statement, the Commission recapitulates certain examples that the staff or the Commission previously considered sufficiently unique to warrant a more careful analysis of serious accidents. It leaves the inclusion of ongoing

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[5] I assume, for present purposes, that the environmental phase of TMI's license proceeding is closed because an FES was once prepared. I need not decide — but do not necessarily reject — UCS' contention that, within the meaning of the policy statement, the restart proceeding is a separate licensing action in which the staff's environmental evaluation was plainly not completed (indeed, appears to have hardly even begun) at the time the Commission issued its policy statement. I also note that the Administrative Procedure Act defines licensing broadly to include "agency process respecting the grant, renewal, denial, revocation, suspension, annulment, withdrawal, limitation, amendment, modification, or conditioning of a license." 5 U.S.C. 551(9).

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proceedings to case-by-case consideration, but requires that such proceedings be reopened only if they present special circumstances similar to those historically relied on.

The evolution of the "special circumstances" concept, taken together with the Commission's statement that "approximately equal attention shall be given" to the issues of probability and consequences in future cases, 45 *Fed. Reg.* at 40,103, indicates that "similar special circumstances" can embrace either potentially increased probabilities of an accident or potentially greater consequences. My colleagues implicitly accept this notion of "special circumstances" but believe that neither is present in this case. In my view, both are present and I believe Commission determinations lend support to that conclusion.

a. *Increased Probability of an Accident*

The TMI-2 accident, the most serious of its kind in U.S. commercial reactor operating history, prompted the Commission to conclude that it lacked the requisite assurance that TMI-1 could be operated without undue risk to the public health and safety. It therefore ordered a special, discretionary hearing to determine whether TMI-1 could safely resume operation. Presumably, the Commission was concerned that there was some increased risk of an accident or it would not have ordered either the indefinite shutdown of the reactor or the special hearing. The Commission, in fact, explicitly termed the circumstances at TMI-1 "unique" because of (1) potential interaction between Units 1 and 2, (2) questions regarding the licensee's management capability and technical resources, (3) the potential effect of Unit 2 decontamination efforts, and (4) deficiencies in emergency planning and station operating procedures. 10 NRC at 143-44. These circumstances were sufficiently special to justify treating TMI-1 differently from other Babcock & Wilcox designed reactors. I cannot agree that they are suddenly insufficiently special to warrant invocation of the policy statement.

My colleagues suggest, however, that now that a thorough review of safety and related matters has been conducted and will shortly be completed, it can be concluded that TMI-1 is no different from the scores of other plants around the nation. Hence, they appear to argue that special circumstances no longer exist. I cannot agree that this is a reasonable implementation of the Commission's policy directive. I believe the Commission meant that if, at some pre-decisional stage of a case, special circumstances are found, the record is to be reopened or expanded and serious accidents are to be examined from an environmental perspective in accordance with the requirements of the policy statement.

Furthermore, I am not prepared to join in the majority's implicit conclusion that the environmental examination of serious accidents is wholly redundant of the safety analysis. The Commission has explicitly observed that the environmental evaluation of serious accidents under the new policy is to proceed "in coordination

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with other ongoing safety-related activities. . . ." 45 *Fed. Reg.* 40,101. I must conclude that the Commission finds valuable the discrete, although perhaps related environmental examination that it now conducts routinely along with its safety review.

In the instant case, moreover, as the Licensing Board concedes, the record contains no evidence of environmental consequences even as to those accident scenarios actually litigated, despite the Commission's 1980 pronouncement that probabilities and consequences are to receive roughly equal analytical treatment. The record also contains no probability estimates or other quantification of risk of the type contemplated by the policy statement. The Licensing Board's decision, moreover, continues to rely on the pre-1980 accident classification scheme even though the Commission abandoned it in its policy statement well before the date of the Licensing Board's decision. It is not at all surprising that the Licensing Board itself described the staff's method for determining accident design bases as "not ideal." 14 NRC at 1383.

b. Potentially Greater Consequences

The Commission has also acknowledged that the TMI-area residents constitute a highly special neighboring population. In the policy statement issued in response to the *PANE* case,[6] the Commission noted the court's characterization of the neighboring population as one that is potentially suffering some "post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe." See the Commission's policy statement, 47 *Fed. Reg.* 31,762 (July 22, 1982). There may well be a greater fear of serious accident than at the ordinary plant. The Commission observed that the fear resulting from the occurrence of the accident at TMI-2 serves to distinguish the potential psychological consequences of restarting TMI-1 from the consequences likely to result if other reactors are authorized to continue operations. The presence of a neighboring population potentially suffering serious mental health effects, like the presence of a geographically dense population cited in the policy statement, is sufficiently special in my view to warrant invocation of the policy statement. Unless the *PANE* case is overruled and the Commission withdraws its July 22, 1982 policy statement, I see no way to disregard the Commission's recognition that the potential consequences of restarting TMI-1 may be different from those that obtain when other plants are authorized to continue or resume operations.

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[6] *PANE* v. *NRC*, 678 F.2d 222 (D.C. Cir.), *cert. granted sub nom. Metro. Ed.* v. *PANE*, 51 U.S.L.W. 3339 (U.S. Nov. 2, 1982) (No. 81-2399).

c. *Summary*

My colleagues claim that the Commission did not intend the occurrence of the TMI-2 accident, without more, to be considered a special circumstance so as to make prior or ongoing proceedings subject to reopening or expansion. I have no quarrel with that observation if what they mean is that the fact that an accident occurred does not mandate the routine reopening or expansion of all cases involving B&W reactors. That is quite different, in my view, from reopening the very case that led to the change in policy.[7]

In sum, I cannot accept the position that TMI-1 should be treated no differently than all the currently operating reactors for which new environmental concerns either have not arisen or have been resolved. The Commission observed that the TMI-2 accident was, at least in part, a catalyst for the change in policy regarding serious accidents. I find it curious, in such circumstances, that the staff argues, and my colleagues agree, that the very circumstances that were sufficiently special to trigger both the change in policy and the shutdown of TMI-1 pending a full adjudicatory hearing are now somehow insufficiently special to warrant application of the new policy.

3. *The Nexus Requirement*

The Licensing Board rejected UCS Contention 20 only because, to the extent that it sought an evaluation of a broader range of Class 9 accidents, it had no nexus to the TMI-2 accident. 14 NRC at 1731. I disagree with the Board's approach. In my view, the Board should have applied the Commission's policy statement, which does not impose any requirement that there be a nexus between the special circumstances found and the type of accidents that are to be considered. Once it is determined that special circumstances are present, the staff is required to evaluate a broad range of serious accidents, including those beyond the design basis, not just those that are in some way related to the special circumstances.

In any event, I disagree with the Licensing Board that the narrow definition of "nexus" used in connection with design issues must inevitably be applied to all aspects of the restart proceeding. In the design phase of the proceeding, the Board permitted the parties to litigate the adequacy of plant design to withstand or

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[7] Somewhat similarly, the Director of Nuclear Reactor Regulation, in a series of decisions which the Commission has declined to review, has concluded that the mere change in Commission policy to allow broader consideration of accidents in the future in light of the newly acquired knowledge gained as a result of the TMI-2 accident does not warrant a reopening of all license proceedings involving operating reactors. See, for example, *Arizona Public Service Company* (Palo Verde Nuclear Generating Station, Units 1, 2 and 3) *et al.*, DD-80-22, 11 NRC 919, 931 (1980). These decisions are not binding on the adjudicatory boards and the majority, quite properly, has not relied on them. It is worth noting, however, that there is also no inconsistency between my conclusion in the instant case and the Director's conclusion in those cases.

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mitigate possible Class 9 accidents with a "nexus" to the TMI-2 accident; for this purpose, the Board defined the nexus requirement narrowly to include only those accident scenarios stemming from a loss of main feedwater or a small break loss of coolant. Based on that record, the Board further concluded that Class 9 accidents with a nexus to the TMI-2 accident were no longer credible at TMI-1. Although such definition of nexus was unchallenged when applied to design matters (indeed, the Commission approved its application for such matters), the Board employed a broader definition in connection with other issues and, in my view, should have employed a broader definition in examining environmental issues once the Commission issued its policy statement.

In my judgment, the Board improperly limited the nexus to matters of probability and further to the probability of accidents stemming solely from a TMI-2 type accident. For management, separation, and emergency planning purposes, the Board employed a broader view of the lessons learned and improvements required as a result of the TMI-2 accident. It was the occurrence of the accident itself that gave rise to far-reaching concerns about the licensee's management capability and technical resources for a broad range of operational and accident situations, not just the likelihood that another accident identical to the one at TMI-2 might occur. The TMI-2 accident called into question the licensee's emergency preparedness for all types of potential accidents. Similarly, the Board considered whether training was adequate to cope with unforeseen types of accidents. In much the same way, the accident raises doubts about the adequacy of the staff's and the licensee's environmental review for the TMI facility. In my judgment, the TMI-2 related considerations that brought about the change in Commission policy concerning Class 9 accidents, together with the special circumstances which the Commission enumerated in ordering a suspension of the TMI-1 operating license pending completion of a discretionary, adjudicatory hearing, provide a sufficient nexus to justify the type of accident analysis that the staff now undertakes as a matter of course.

4. Further Procedures

I am extremely sensitive to the possible delay that may now result because the analysis I believe is required by Commission policy was not undertaken in a timely fashion. Because I believe the Licensing Board erred, however, I am compelled to recommend corrective action. Given the Commission's special concerns regarding TMI-1, neither the Licensing Board nor the staff explains to my satisfaction why, for the purposes of the policy statement, we should now treat TMI-1 as if it were simply a typical operating reactor.

I express no view as to whether the restart of TMI-1 constitutes a major federal action significantly affecting the environment or whether circumstances have changed since the last environmental examination so that NEPA would require a

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supplemental environmental review.[8] These are matters to be decided by the Commission in light of the *PANE* litigation. The Commission may, nevertheless, as a matter of discretion, undertake analyses not mandated by statute, as it has explicitly done in the *Indian Point* case. As discussed above, I believe this is also what the Commission's policy directive contemplates in this case.

Because I am unable to persuade my colleagues that an environmental analysis of serious accidents should now be conducted, I cannot direct what procedures should be employed to integrate the serious accident analysis called for in the policy statement into the final decision in this case. I note, however, that the court in the *PANE* case expressly left the Commission with discretion to choose the procedures for studying the significance of the psychological health impacts arising from the restart of TMI-1. (The licensee has requested a waiver of the formal hearing requirement if the Commission should conclude that its regulations would ordinarily mandate a hearing, and the matter of procedures is now before the Commission for disposition.)[9] I believe that similar discretion is available with regard to a consideration of serious accidents. This is a special proceeding, not mandated by statute[10]; moreover, the Commission's policy toward evaluating serious accidents changed during the course of the case. The Commission thus may not necessarily be required to start from scratch and employ full trial-type procedures at this juncture. It is the undertaking of the substantive analysis that is important. Perhaps the prompt preparation of a serious accident analysis by the staff along the lines it now undertakes routinely, with an opportunity for comment by the parties as part of the Commission's ultimate decision in this case, will be sufficient.[11]

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[8] See *PANE* v. *NRC*, *supra*, note 6, at 233, and *WATCH* v. *Harris*, 603 F.2d 310 (2d Cir.), *cert. denied sub nom. Waterburg Urban Renewal Agency* v. *WATCH*, 444 U.S. 995 (1979).

[9] See CLI-82-13, 16 NRC 21 (1982).

[10] See generally, *Consolidated Edison Company of New York, Inc.* (Indian Point, Unit 2), CLI-81-1, 13 NRC 1, 5 n.4 (1981).

[11] *Cf:* *Aberdeen & Rockfish RR Co.* v. *SCRAP*, 422 U.S. 289, 319 (1975); *Environmental Defense Fund, Inc.* v. *Hoffman*, 566 F.2d 1060, 1071 (8th Cir. 1977); *Hanly* v. *Kleindienst*, 471 F.2d 823, 834 (2d Cir. 1972).

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Cite as 16 NRC 1754 (1982) **ALAB-706**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Dr. John H. Buck
Gary J. Edles

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*
(Perry Nuclear Power Plant,
Units 1 and 2) **December 15, 1982**

The Appeal Board denies applicants' motion for directed certification of the Licensing Board's order (LBP-82-98, 16 NRC 1459 (1982)) admitting three late-filed contentions of intervenors in this operating license proceeding.

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

Appeal board review of an interlocutory licensing board ruling via directed certification is discretionary and granted infrequently. A party invoking review by this means must demonstrate that the board's action either (a) threatens the party adversely affected with immediate and serious irreparable harm which could not be remedied by a later appeal, or (b) affects the basic structure of the proceeding in a pervasive or unusual manner. *Public Service Electric and Gas Company* (Salem Nuclear Generating Station, Unit 1), ALAB-588, 11 NRC 533, 536 (1980), and cases cited. A ruling that does no more than admit a contention has a low potential for meeting that standard. *Duke Power Company, et al*. (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 464 (1982).

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RULES OF PRACTICE: INTERLOCUTORY APPEALS

The admission by a licensing board of more late-filed than timely contentions does not, in and of itself, affect the basic structure of a licensing proceeding in a pervasive or unusual manner warranting interlocutory appeal board review. If the late-filed contentions have been admitted by the board in accordance with 10 CFR §2.714, it cannot be said that the board's rulings have affected the case in a pervasive or unusual manner. Rather, the board will have acted in furtherance of the Commission's own rules.

RULES OF PRACTICE: CONTENTIONS

Neither the Commission's Rules of Practice nor the pertinent Statement of Consideration puts an absolute or relative limit on the number of contentions that may be admitted to a licensing proceeding. See 10 CFR §2.714(a), (b); 43 Fed. Reg. 17798, 17799 (Apr. 26, 1978).

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

The fact that applicants will be unable to regroup the time and financial expense needed to litigate late-filed contention is a factor that is present when any contention is admitted and thus does not provide the type of unusual delay that warrants interlocutory appeal board review. *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1114 (1982).

APPEARANCES

Jay E. Silberg and **Harry H. Glasspiegel,** Washington, D.C., for applicants, The Cleveland Electric Illuminating Company, *et al.*

Susan L. Hiatt, Mentor, Ohio, for intervenor Ohio Citizens for Responsible Energy.

James M. Cutchin, IV, and **Colleen P. Woodhead** for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

Applicants, the Cleveland Electric Illuminating Company, *et al.*, have moved for directed certification[1] of the Licensing Board's October 29, 1982, order (LBP-82-98, 16 NRC 1459) admitting three late-filed contentions of intervenor Ohio Citizens for Responsible Energy (OCRE). The contentions concern turbine missiles, in-core thermocouples, and steam erosion.[2] Applicants contend that our discretionary, interlocutory review is "necessary in order to restore the basic structure of this proceeding." Applicants' Motion (Nov. 18, 1982) at 3. The NRC staff supports the motion, while OCRE opposes it.

As explained below, applicants have failed to establish that our intercession here is warranted at this time. Consequently, we deny their motion.

1. This is the second time in this operating license proceeding that applicants have invoked the directed certification procedure as a means to secure interlocutory review of the Licensing Board's admission of a late-filed contention. In *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105 (1982), we declined review of the Board's admission of a contention concerned with hydrogen control. There (*id.* at 1110) we reminded applicants that

> [r]eview of an interlocutory licensing board ruling via directed certification is discretionary and granted infrequently. A party invoking review by this means must demonstrate that the board's action "either (a) threatens the party adversely affected with immediate and serious irreparable harm which could not be remedied by a later appeal, or (b) affects the basic structure of the proceeding in a pervasive or unusual manner." *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-588, 11 NRC 533, 536 (1980), and cases cited.

Subsequently, in *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 464 (1982), we emphasized that "[a] ruling that does no more than admit a contention . . . has a low potential for meeting that standard."

Applicants accordingly acknowledge that requests for interlocutory review are disfavored. They contend, however, that the Board's October 29 ruling has "seriously undermined" the basic structure of this proceeding so as to warrant directed certification. Applicants' Motion at 3. They principally complain that, to their "extreme prejudice," the Licensing Board has embarked on a course unlike

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[1] See 10 CFR §§2.718(i), 2.785(b)(1).

[2] The Licensing Board originally admitted seven contentions in July 1981. See LBP-81-24, 14 NRC 175, 232-33. On August 18, 1982, OCRE moved for leave to file a total of six late contentions, including the three here at issue.

that in other NRC licensing proceedings by admitting more late-filed contentions than timely ones. *Id.* at 4, 3. Further, they speculate that the Board will admit still more late-filed contentions in the future. *Ibid.* Applicants argue that this action is the result of the Board's incorrect application and "unique interpretations" of 10 CFR §2.714(b), which requires "the bases for each contention [to be] set forth with reasonable specificity" and late-filed contentions to satisfy the criteria enumerated in 10 CFR §2.714(a)(1). *Id.* at 4.[3]

We are unable to accept applicants' view, endorsed by the staff, that the admission of more late-filed than timely contentions necessarily affects the basic structure of the proceeding in a pervasive or unusual manner.[4] In the first place, the Commission's Rules of Practice provide for the submission of late contentions. Further, neither the rules themselves nor the pertinent Statement of Consideration puts an absolute or relative limit on the number of such contentions that may be admitted. See 10 CFR §2.714(a), (b); 43 Fed. Reg. 17798, 17799 (Apr. 26, 1978). Instead, 10 CFR §2.714 lists five factors that a licensing board must balance in determining whether to admit one or more late-filed contentions. See note 3, *supra*. Among these is the extent to which their admission will broaden the issues or delay the proceeding. 10 CFR §2.714(a)(1)(v). Thus, if a board has taken this into account along with the other four factors — even though the admission of a significant number of late contentions might well broaden the issues or delay the proceeding — it cannot be said that the board's ruling has affected the case in a pervasive or unusual manner. Rather, the board will have acted in furtherance of the Commission's own rules.

2. Here, of course, applicants attempt to buttress their request for directed certification with the argument that the Board has improperly weighed the criteria of 10 CFR §2.714(a)(1) and erroneously found the basis for each contention to be sufficiently specific. In applicants' view, this reflects the "low esteem" in which the Board holds the requirements of 10 CFR §2.714, with "the likely effect . . . that additional late-filed contentions will continue to be offered and accepted, to the extreme prejudice of Applicants." Applicants' Motion at 4 (footnote omitted).

We disagree with applicants' assessment of the Licensing Board's action. The Board considered individually each of the six contentions submitted by OCRE in its August 1982 motion. It determined whether each has a basis and whether the

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[3] These factors are:

(i) Good cause, if any, for failure to file on time.
(ii) The availability of other means whereby the petitioner's interest will be protected.
(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
(iv) The extent to which the petitioner's interest will be represented by existing parties.
(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

[4] For the sake of clarification, the Board originally admitted seven contentions, one of which was later dismissed. It has since admitted eight more as late-filed, two of which have been dismissed or withdrawn. Thus, an equal number of timely and late contentions actually remain to be litigated.

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criteria governing late-filed contentions weighs in favor of the admission of each. As to three, the Board answered one or both questions in the negative and dismissed those contentions.[5] With respect to the remaining three, however, the Board — agreeing with the staff — found a basis for each. See Staff Response to OCRE Motion (Sept. 21, 1982) at 3, 6, 7. Further, it made specific findings on the five factors of 10 CFR §2.714(a)(1), determining, *inter alia*, that OCRE had good cause for tendering each of these contentions late and that intervenor was likely to aid in the development of a sound record. (We note, in this regard, that applicants conceded that the steam erosion contention was timely. Applicants' Answer to OCRE Motion (Sept. 16, 1982) at 34.) The Board thus concluded that on balance the five factors weighed in favor of admission of the contentions dealing with turbine missiles, in-core thermocouples, and steam erosion.

Although we imply neither approval nor disapproval of its rulings, we are unable to conclude that the Licensing Board has effectively abandoned or fundamentally altered either the requirements of 10 CFR §2.714 or Commission precedent. On the contrary, we believe its decision — admitting some contentions and dismissing others — reflects at the least a discriminating application of the rules.[6] OCRE's suggestion that applicants' motion merely reveals disagreement with the Board's rulings, rather than showing a pervasive or unusual distortion of the proceeding occasioned by those rulings, is on the mark. Applicants may well be correct in their claim that the Board erred in its ultimate judgment to admit one or more of these contentions. That alone, however, does not provide a basis for our interlocutory review. Perry, *supra*, 15 NRC at 1113.[7]

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[5] The Board dismissed the so-called "Humphrey concerns" contention without prejudice, inviting OCRE to refile it if it can produce previously unavailable information linking the subject matter of this proposed contention to the Perry facility. LBP-82-98, *supra*, 16 NRC at 1461, 1465. Cf. *Catawba*, *supra*, 16 NRC at 468-70. The Board noted, however, that "this extensive list of unsifted concerns raises grave questions concerning the broadening of issues and delay of the proceeding." LBP-82-98, *supra*, 16 NRC at 1465.

[6] We note that OCRE based all six of its late contentions on the staff's Safety Evaluation Report (SER), filed in May 1982. OCRE Motion for Leave to File Its Contentions 21 through 26 (Aug. 18, 1982) at 7. If the SER for Perry had been prepared and submitted in a more timely fashion, the Licensing Board might not have been confronted with the problems inherent in considering late-filed contentions — particularly whether their acceptance will unduly delay the proceeding.

[7] Applicants imply that a grant of directed certification here would be as justified as our acceptance of the referred questions in *Catawba*, *supra*. Applicants' Motion at 5. We disagree. In *Catawba* we answered certain generic questions, rather than reviewing the Board's application of 10 CFR §2.714 to the specific facts of the case, which applicants call upon us to do here. In doing so, we emphasized that "our general policy disfavoring interlocutory review of licensing board action on specific contentions" was to "remain[ ] intact." 16 NRC at 465.

We also note that applicants have failed to substantiate their claim of "extreme prejudice" as a result of the Board's ruling. See Applicants' Motion at 4. They allude to possible delay in the already bifurcated hearings but provide no details. *Id.* at 4 n.5. Applicants point out, however, that, if they are required to litigate the three contentions here at issue, they will never be able to recoup the time and financial expense. *Id.* at 5 n.6. But we have previously stated in this proceeding (as well as in others) that this factor is present when any contention is admitted and thus does not provide the type of unusual delay that warrants our interlocutory involvement. *Perry*, *supra*, 15 NRC at 1114.

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Applicants' motion for directed certification is *denied*.
It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

Cite as 16 NRC 1760 (1982) ALAB-707

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Eilperin, Chairman
Thomas S. Moore
Dr. Reginald L. Gotchy

In the Matter of **Docket No. 50-341-OL**

THE DETROIT EDISON COMPANY,
et al.
(Enrico Fermi Atomic Power Plant,
Unit 2) **December 21, 1982**

The Appeal Board affirms a Licensing Board decision (LBP-82-96, 16 NRC 1408 (1982)) denying an intervention petition filed after the close of the evidentiary record for failure to meet the criteria governing late intervention specified in 10 CFR §2.714(a). The Appeal Board forwards the petition and accompanying materials to the Director of Nuclear Reactor Regulation with a request that they be treated as a 10 CFR §2.206 petition.

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS

An appeal board will not overturn a licensing board's denial of a late intervention petition under the criteria specified in 10 CFR §2.714(a) unless the board has abused its direction. *South Carolina Electric and Gas Company, et al*. (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 885 (1981), *aff'd sub nom. Fairfield United Action* v. *Nuclear Regulatory Commission*, 679 F.2d 261 (D.C. Cir. 1982).

RULES OF PRACTICE: REOPENING OF PROCEEDINGS

A party seeking to reopen a proceeding for consideration of a newly recognized contention must satisfy an objective test of good cause. Among other things, the party seeking to reopen must show that the issue it now seeks to raise could not have been raised earlier. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973). In addition, the party must show that the matter it wishes to have considered is (1) timely presented, (2) addressed to a significant issue, and (3) susceptible of altering the result previously reached. See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 364-65 (1981); *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978).

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS

In the absence of good cause, a petitioner must make a "compelling showing" on the other four 10 CFR §2.714(a) factors in order to justify late intervention. *Summer, supra*, 13 NRC at 886. See *Mississippi Power & Light Company, et al.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982).

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS (ASSISTANCE IN DEVELOPING A SOUND RECORD)

In addressing the factor of the extent to which it can assist in developing a sound record, a petitioner "should set out with as much particularity as possible the precise issues it plans to cover, identify its prospective witnesses, and summarize their proposed testimony. Vague assertions regarding petitioner's ability or resources . . . are insufficient." *Grand Gulf, supra*, 16 NRC at 1730 (citations omitted).

RULES OF PRACTICE: UNTIMELY INTERVENTION PETITIONS (ADEQUACY OF EXISTING REPRESENTATION)

Until the parties to a proceeding that oppose a late intervention petition suggest another forum that appears to promise a full hearing on the claims petitioner seeks to raise, a petitioner need not identify and particularize other remedies as inadequate.

NUCLEAR REGULATORY COMMISSION: RULEMAKING AUTHORITY

The Commission's late intervention rules are the kind of reasonable procedural rules it is entitled to establish for participation in its proceedings. *BPI* v. *Atomic Energy Commission*, 502 F.2d 424 (D.C. Cir. 1974). See generally *Summer*, *supra*.

RULES OF PRACTICE: SHOW-CAUSE PROCEEDING

In every case, a petitioner that for some reason cannot gain admittance to a construction permit or operating license hearing, but wishes to raise health, safety, or environmental concerns before the NRC may file a request with the Director of Nuclear Reactor Regulation under 10 CFR §2.206 asking the Director to institute a proceeding to address those concerns. The Director can then either institute a show-cause proceeding if he believes one is warranted, or issue a written statement of reasons explaining why no regulatory action is necessary. See *Washington Public Power Supply System* (WPPSS Nuclear Project Nos. 1 & 2), CLI-82-29, 16 NRC 1221, 1228-29 (1982). See also *Porter County Chapter of the Izaak Walton League of America, Inc.* v. *Nuclear Regulatory Commission*, 606 F.2d 1363, 1369-70 (D.C. Cir. 1979).

APPEARANCES

Arden T. Westover, Sr., Monroe County, Michigan, for the petitioner, the Monroe County Board of Commissioners.

John R. Minock, Ann Arbor, Michigan, for the intervenor Citizens for Employment and Energy.

Harry H. Voigt, Washington, D.C., for the applicants, Detroit Edison Company, *et al.*

Colleen P. Woodhead, for the Nuclear Regulatory Commission staff.

DECISION

This is an appeal by Monroe County from a Licensing Board decision that denied its late-filed petition to intervene and reopen the record in the Fermi-2

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operating license proceeding. See LBP-82-96, 16 NRC 1408, 1429-35 (1982). Fermi-2 is located in Monroe County, Michigan, in Frenchtown Township, on the western shore of Lake Erie. The County, through its Board of Commissioners, seeks to intervene in the operating license proceeding to raise questions about the workability of specific aspects of the emergency plan for the facility.[1]

In particular, the County asserts that it (1) lacks the bus capacity to evacuate people who are without transportation, (2) doubts the willingness and training of volunteer emergency workers to carry out all of their assigned tasks, (3) lacks sufficient funds or expertise to undertake recovery and reentry operations, (4) questions whether an evacuation can be successfully accomplished given the length of time needed to mobilize command officials, the inadequacy of existing roads, and the frequent impassability of the roads in winter, (5) lacks sufficient personnel to staff decontamination/reception centers, (6) questions whether potassium iodide supplies can be made available quickly, (7) believes the monitoring systems now in place to detect radiological releases are inadequate, and (8) doubts that the method chosen for decontamination of cars and trucks is adequate. Monroe County Petition at 3-7.

The County filed its petition on August 27, 1982, nearly four years after the opportunity for timely intervention had expired, and after the close of evidentiary hearings.[2] Both the applicants and the NRC staff opposed the County's late-filed request. The Licensing Board reviewed the arguments of the petitioner and the parties according to the criteria for late intervention specified in 10 CFR §2.714(a) and denied the County's petition. LBP-82-96, *supra*, 16 NRC at 1435. We affirm.

I

We begin by summarizing the Licensing Board's evaluation of the five factors governing late intervention requests.[3] It is settled that we will not overturn the Board's determination unless that analysis reveals that it has abused its discretion.

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[1] The Commission's emergency planning requirements are principally found at 10 CFR §50.47 and 10 CFR Part 50, Appendix E. Guidance implementing those standards is provided by NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Rev. 1 (November 1980). See generally *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-680, 16 NRC 127 (1982).

[2] The notice of opportunity for hearing was published September 11, 1978. 43 *Fed. Reg.* 40327. Evidentiary hearings were held from March 31 to April 2, 1982.

[3] The factors a board must consider are as follows (10 CFR §2.714(a)(1)):

(i) Good cause, if any, for failure to file on time.
(ii) The availability of other means whereby the petitioner's interest will be protected.
(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
(iv) The extent to which the petitioner's interest will be represented by existing parties.
(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

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South Carolina Electric and Gas Company, et al. (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 885 (1981), *aff'd sub nom. Fairfield United Action* v. *Nuclear Regulatory Commission*, 679 F.2d 261 (D.C. Cir. 1982).

The Licensing Board found that the County had been involved in the emergency planning process since early 1980. The Board thought that the County must have been aware of the issues it now seeks to raise no later than November, 1981 (nine months before its intervention request), when Monroe County submitted its emergency plan to the Federal Emergency Management Agency (FEMA) for review and comment. 16 NRC at 1432. The Board also noted that a full-scale exercise of the emergency plan was carried out on February 2-3, 1982, eight weeks before the beginning of the evidentiary hearing; yet the County did not seek to intervene for some seven months after the exercise. *Id.* at 1431, 1432. In the Board's view, Monroe County did not show "good cause" why its intervention request was delayed to such an extent. *Id.* at 1432-33.

As to the remaining 10 CFR §2.714(a)(1) factors, the Board found that the County had not satisfied its burden of showing why means other than intervention — such as review by FEMA and the NRC staff — were inadequate to protect its interest; that the County had presented no factual support for its assertion that it could assist in developing a sound record; and that admitting the County to the proceeding after the evidentiary record had closed would be tantamount to beginning a new case, thereby broadening the issues and delaying the proceeding. *Id.* at 1433-35. While no other party represented the County's interest (the one factor favoring the grant of intervention), on balance, the Board found

> that the lack of good cause (factor one) and the delay in the proceeding (factor five) outweigh by a considerable margin the fact that no other party will represent the County's asserted interest (factor four). For this reason, we deny the County's petition.

Id. at 1435. This appeal followed.

II

The spur to Monroe County's late intervention petition was a June 16, 1982 public meeting held by the County Board of Commissioners. The concerns expressed by the County residents at that meeting formed the basis of the intervention petition filed some two months later. Monroe County (supported by intervenor Citizens for Employment and Energy) argues that because it became aware of the issues it now seeks to raise only at that meeting, it had good cause for not filing earlier.

The difficulty with the County's position is its subjective test for good cause — that lateness is excusable whenever a prospective intervenor has been unaware of the issues it belatedly seeks to raise. A subjective test of this kind provides an

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incentive for remaining uninformed and creates the prospect of collateral factual contests aimed at ascertaining the state of mind of the prospective intervenor. We would not allow a *party* to the proceeding to press a newly recognized contention after the evidentiary hearing was concluded unless the party could satisfy an objective test of good cause. Among other things, our standard requires that the party seeking to reopen must show that the issue it now seeks to raise *could not have been raised earlier*. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973).[4] We see no reason to employ a different and more lenient good cause standard for the late petitioner for intervention than for a party who is already in the proceeding and seeks to raise new issues.

Our review of the Licensing Board's application of that standard leaves no question that the Board's findings bearing on good cause are fully supported. All of the emergency planning issues Monroe County now presses are matters of which it should have been aware probably years earlier and, in any event, certainly no later than February 3, 1982, the date the emergency planning exercise for Fermi-2 was completed. The condition of the roads in the vicinity of the plant, the effect of winter weather, the number of buses available for transportation, the availability of emergency workers and the adequacy of their training — these, and the other issues, are well within the understanding of a local governmental body. They could have, and should have, been raised earlier.

While we recognize that "good cause," or its absence, is but one of five factors to be considered and not necessarily decisive, it nevertheless is one of the dominant criteria. In the absence of good cause, a petitioner must make a "compelling showing" on the other four factors in order to justify late intervention. *Summer, supra,* 13 NRC at 886. See *Mississippi Power & Light Company, et al.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982). Here, the Licensing Board found that such a showing was not made. 16 NRC at 1433-35. We turn to the Board's analysis of these other factors.

There is no doubt that the grant of Monroe County's intervention petition would have broadened the issues and delayed the conclusion of the proceeding (factor five). As the Licensing Board rightly remarked (16 NRC at 1434):

> If the County were admitted now, it would be necessary for us to begin what would amount to a new case. The County's contentions would have to be screened for admissibility at a new prehearing conference, a new round of discovery would begin, another prehearing conference would occur

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[4] A participant that seeks to reopen a proceeding must show that the matter it wishes to have considered is (1) timely presented, (2) addressed to a significant issue, and (3) susceptible of altering the result previously reached. See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-5, 13 NRC 361, 364-65 (1981); *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978).

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> before another evidentiary hearing, and the parties would file a new set of proposed findings. Only then would we be able to reach a decision. It is obvious that the proceeding would be delayed if the County were admitted now.

Monroe County argues that the delay would be inconsequential because applicants do not propose to begin full power operation of Fermi-2 until November 1983. The Board correctly rejected that argument:

> [It] ignores the words of the regulation, which refer to delay of the *proceeding*, not to delay of operation of the facility. The Applicants and NRC Staff are entitled to assume, after the hearing has reached the stage this one has, that both the issues to be litigated and the parties to the hearing have been established with finality. This is simply a matter of fairness to them as parties.

Ibid. (emphasis in original). See generally *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-671, 15 NRC 508, 511 (1982); *Summer, supra,* 13 NRC at 886.[5] In essence, the County is in the same sort of position as a party that seeks to reopen the record. As we have noted, the movant in that position must demonstrate that its issues are significant, are susceptible of altering the result previously reached, and could not have been raised earlier. See n. 4, *supra*. Monroe County's petition does not satisfy that test, if for no other reason than that its emergency planning issues could have been raised far earlier.

The extent to which a petitioner can assist in developing a sound record — factor three — is also an important criterion. We have previously explained that when a petitioner addresses this factor

> it should set out with as much particularity as possible the precise issues it plans to cover, identify its prospective witnesses, and summarize their proposed testimony. Vague assertions regarding petitioner's ability or resources . . . are insufficient.

Grand Gulf, supra, 16 NRC at 1730 (citations omitted). Here, the Licensing Board found that the County offered no factual support for its assertion that it could make a useful contribution to the Fermi-2 proceeding. 16 NRC at 1433-34.

We do not view the County's presentation with as cold an eye. The issues Monroe County seeks to raise are set out with reasonable specificity in its petition, and the transcript of the June 1982 public meeting offers some limited additional detail. While the public comments at the meeting are not nearly as extensive as a summary of proposed testimony, and the County has not identified its prospective witnesses, nevertheless the nature of the subject matter — the *County's* ability to implement its *own* emergency plan — provides reason to believe that the County could present witnesses whose testimony would be useful. Thus, we do not fully

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[5] The Board also noted that it was by no means clear, as a factual matter, that the County's participation would not delay the projected fuel loading date of June, 1983. 16 NRC at 1434-35.

share the Licensing Board's evaluation of this criterion. However, even weighing this factor more in the County's favor does little to offset the unexcused lateness of the filing, and the impact it would have, if granted, on the proceeding.

The Board found that factor four weighed in the County's favor because no existing party could adequately represent the County's interest. 16 NRC at 1434. It was plainly correct. When the County's intervention petition was filed the evidentiary record was already closed. In these circumstances, it is apparent that no other party could take up the County's issues. The adequacy of existing representation factor, however, is probably the least important of the five late intervention criteria. See *Summer, supra*, 13 NRC at 894-95.

Similarly weighing in the County's favor, but again of relatively minor importance, is the lack of availability of other means to protect its interest (factor two) — the fact that absent admission to this licensing proceeding it is not assured of an adjudicatory hearing on the claims it seeks to raise.[6] On balance, however, the first and fifth factors (good cause, and the extent of delay and broadening of issues) point decisively against the grant of the County's petition. In the circumstances, it was plainly not an abuse of discretion for the Board to deny the County's late intervention petition.

What then is to be done with potentially significant issues that are raised in an inexcusably late-filed intervention petition? At bottom, Monroe County claims that the Fermi-2 emergency plan cannot work. The claim is obviously one that must not be ignored, but it is pressed so late that it cannot easily fit into the adjudicatory process.[7]

As we have noted, the second late intervention criterion calls upon NRC adjudicatory boards to weigh the availability of other means whereby the petitioner's interest will be protected. In *every* case, a party that for some reason cannot gain admittance to a construction permit or operating license hearing, but wishes to raise health, safety, or environmental concerns before the agency may file a request with the Director of Nuclear Reactor Regulation under 10 CFR §2.206 asking the Director to institute a proceeding to address those concerns. The 10 CFR §2.206 remedy is a real one. The Commission has recently explained:

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[6] See *Grand Gulf, supra*, 16 NRC at 1730-31; *Summer, supra*, 13 NRC at 894-95; *Long Island Lighting Company* (Jamesport Nuclear Power Station, Units 1 and 2), ALAB-292, 2 NRC 631, 648 (1975).

We disagree with the Licensing Board's conclusion that the County failed to carry its burden of showing the lack of availability of other means to protect its interest. This wrongly places on the petitioner the obligation of proving a universal negative. At least until the parties opposing intervention suggest a forum that appears to promise a full hearing, the petitioner need not identify and particularize other remedies as inadequate.

[7] We reject the argument of Citizens for Employment and Energy (CEE) that an intervention petition cannot be denied consistent with the adjudicatory hearing provisions of the Atomic Energy Act and Administrative Procedure Act. CEE Response to Appeal (Dec. 10, 1982) at 8-9. The Commission is entitled to establish reasonable procedural rules for participation in its proceedings. *BPI* v. *Atomic Energy Commission*, 502 F.2d 424 (D.C. Cir. 1974). Its late intervention rules are of that kind. See generally *Summer, supra*.

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> The invocation of this procedure . . . requires that the NRC staff give serious consideration to requests for regulatory action concerning a licensed facility so long as the request specifies the action sought and sets forth the facts that constitute the basis of the request. The staff must analyze the technical, legal, and factual basis for the relief requested and respond either by undertaking some regulatory activity or, if it believes no show-cause proceeding or other action is necessary, by advising the requestor in writing with a statement of reasons explaining that determination. Further, the Commission reviews each of these decisions *sua sponte* to insure that the staff's decision is not an abuse of discretion. Past practice clearly indicates that, as the Appeal Board in [*Northern Indiana Public Service Company* (Bailly Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980)] concluded, the agency has "faithfully discharged" its responsibility to give full consideration to petitions seeking relief under section 2.206. *See, e.g., Virginia Electric Power Company* (Surry Nuclear Power Station, Units 1 and 2), CLI-80-4, 11 NRC 405 (1980) (granted by the Commission requiring EIS on repair of steam generators at Surry 1); *Dairyland Power Cooperative* (LaCrosse Boiling Water Reactor), DD-80-9, 11 NRC 392 (1980) (granted in part by the staff by issuing order to show cause to resolve issue of whether certain measures were required to preclude liquefaction at the site); *Consolidated Edison Company of New York, Inc.* (Indian Point Units 1 and 2) *and Power Authority of the State of New York* (Indian Point Unit 3), DD-80-5, 11 NRC 351 (1980) (granted by the staff with respect to Unit 1 by issuing order to show cause why operating license should not be revoked and why decommissioning plan should not be submitted).

Washington Public Power Supply System (WPPSS Nuclear Project Nos. 1 & 2), CLI-82-29, 16 NRC 1221, 1228-29 (1982). See also *Porter County Chapter of the Izaak Walton League of America, Inc.* v. *Nuclear Regulatory Commission*, 606 F.2d 1363, 1369-70 (D.C. Cir. 1979).

The availability of a remedy under 10 CFR §2.206 provides us with what we believe is a proper disposition of Monroe County's late intervention petition. Given the extreme lateness of the County's filing — after the evidentiary record has been closed — the Licensing Board's denial of the petition was plainly within its discretion. But Monroe County's emergency planning concerns are real and should be addressed. Recognizing this, we are forwarding its petition, together with the transcript of the June 16, 1982 public meeting, to the Director of Nuclear Reactor Regulation. We request that he treat the papers as a 10 CFR §2.206 petition. The County may, of course, promptly supplement its petition (to include, for example, affidavits of county officials and other concerned citizens) to document its claims further. So too, the Director, if he deems it advisable, can call upon the good offices of FEMA to provide a further evaluation of offsite emergency

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planning.[8] The Director can then either institute a show-cause proceeding if he believes one is warranted, or issue a written statement of reasons explaining why no regulatory action is necessary. See *WPPS*, *supra*. While this disposition does not guarantee Monroe County an adjudicatory hearing, it will assure, we believe, that the County's concerns are addressed.

Accordingly, the Licensing Board's October 29, 1982 decision denying Monroe County's intervention petition and request to reopen is *affirmed*. The petition and accompanying public meeting transcript are forwarded to the Director of Nuclear Reactor Regulation with our request that they be treated as a 10 CFR §2.206 petition.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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[8] See generally "Memorandum of Understanding between FEMA and NRC" 45 *Fed. Reg.* 82715-16 (Dec. 16, 1980). FEMA's evaluation of the February 1982 emergency planning exercise covered only a few of the issues Monroe County now raises. See generally FEMA Final Report on the Fermi-2 Full Scale Joint Emergency Exercise February 1-2, 1982 (February 22, 1982), attached as Enclosure 1 to Board Notification 82-50 (May 19, 1982), at 8, 11-12.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Reginald L. Gotchy

In the Matter of **Docket No. 50-289**
(Design Issues)

METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island Nuclear
Station, Unit No. 1) **December 29, 1982**

The Appeal Board orders a limited reopening of the evidentiary record in this restart proceeding and directs the licensee and the NRC staff to prepare supplemental testimony on specified issues concerning, *inter alia*, the capability of the "feed and bleed" and two-phase (boiler-condenser) natural circulation processes to remove decay heat from the reactor core in the event of a loss of main feedwater or a small-break loss-of-coolant accident at TMI-1.

TECHNICAL ISSUES DISCUSSED

Decay Heat Removal Methods:
1. Feed and Bleed Cooling
2. Natural Circulation Cooling with Emergency Feedwater
    a. Single-phase and two-phase (boiler-condenser) natural circulation flow
    b. Emergency Feedwater System Reliability
    c. Reactor Coolant System Vents

MEMORANDUM AND ORDER

INTRODUCTION

The Licensing Board issued its partial initial decision dealing with various issues of plant design, modifications, and procedures on December 14, 1981. LBP-81-59, 14 NRC 1211. Essentially, the Board concluded that, once various changes were made, TMI-1 could safely be restarted. The Union of Concerned Scientists (UCS) appealed from that decision. Briefs were filed and we heard oral argument on September 1, 1982.

In an unpublished memorandum and order issued on November 5, 1982, we set forth our preliminary views and concerns regarding the evidentiary record on the issues of the capability of the so-called "feed and bleed" and "boiler-condenser" processes to remove decay heat from the reactor core in the event of a loss of main feedwater or a small-break loss-of-coolant accident at TMI-1. While acknowledging that our review of the record was not yet complete, we indicated that a reopening of the record might be necessary to resolve our concerns. We noted, however, that a more satisfactory alternative might be available. We then requested the parties' views regarding that alternative and, in the absence of our proposed changes, the need for reopening the record.

Those views are now before us. Briefly, the licensee and the NRC staff argue that the existing evidentiary record is adequate and that neither our proposed conditions nor a reopening of the record is required.[1] The Union of Concerned Scientists (UCS) is in partial agreement with our analysis but maintains that the record, nevertheless, must be reopened.[2]

As we explain below, there are substantial inconsistencies in the parties' positions as well as in the testimony presented at the hearing. In addition, the parties' responses raise a number of questions that cannot be resolved satisfactorily on the present record. We have concluded, therefore, that a limited reopening of the record is required to facilitate our prompt resolution of these matters.

BACKGROUND

The TMI-2 accident raised questions about, among other things, the reliability of existing plant systems to provide adequate decay heat removal in the event of a

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[1] See Licensee's Response to Appeal Board Memorandum and Order of November 5, 1982 (November 22, 1982) (hereinafter referred to as Licensee Response); NRC Staff Comments in Response to Appeal Board Memorandum and Order of November 5, 1982 (November 22, 1982) (hereinafter referred to as Staff Response).

[2] See UCS Response to Appeal Board Memorandum and Order of November 5, 1982 (November 22, 1982) (hereinafter referred to as UCS Response).

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main feedwater transient or certain small-break loss-of-coolant accidents. In its August 9, 1979 Order and Notice of Hearing, the Commission ordered the licensee to take a number of short- and long-term actions to resolve certain stated concerns and directed the Licensing Board to determine whether those actions were necessary and sufficient to provide adequate protection of the public health and safety. CLI-79-8, 10 NRC 141, 144-46. Our review of the Board's initial decision on these matters requires a consideration of the soundness of the Board's conclusions regarding the sufficiency of the proposed corrective actions.

Before discussing the parties' arguments in detail, we believe that some further explanation of our concerns may be helpful. In the event of an accident involving the reactor or its safety systems, reactor operation automatically ceases. Although the fission process is terminated, heat continues to be produced in the reactor core by the radioactive decay of fission products.[3] As a result, a reliable means of removing this decay heat is required for an extended period after reactor shutdown.

In the event of a small-break loss-of-coolant accident or a main feedwater transient, the record suggests essentially two means of reactor core decay heat removal at TMI-1, depending on the conditions that are present.[4] If the emergency feedwater (EFW) system is available, core cooling may be accomplished by natural circulation of reactor coolant to the steam generators, where heat is transferred to secondary water which converts to steam. Natural circulation is dependent upon the difference in reactor coolant density in the reactor core and the steam generators.

There are two possible types of natural circulation, depending upon the state of the reactor coolant. If the reactor coolant system is relatively free of steam bubbles, liquid (also called single-phase) natural circulation can be maintained. If there is substantial steam formation at the high points of the reactor coolant system, however, cooling would depend on the establishment of a type of two-phase natural circulation referred to as the "boiler-condenser" mode. In this process, core decay heat generates steam, which rises through the hot legs to the steam generators, where it condenses. Water then flows through the cold legs to the core, where the process begins anew. As indicated above, either type of natural circulation is dependent on the operability of the emergency feedwater system.

If emergency feedwater is not available, decay heat must be removed by the so-called "feed and bleed" process, in which cooling water is injected into the reactor vessel by the high pressure injection (HPI) pumps and expelled from the system through the break itself, the power-operated relief valve (PORV), or the

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[3] The heat rate drops immediately upon shutdown to less than 10 percent of full reactor power, followed by a more gradual decrease.

[4] The reactor coolant pumps and main feedwater system are assumed to be inoperative because they are not safety-grade.

safety relief valves. For this process to be successful, flow from the HPI pumps must be sufficient to replace the amount of coolant lost out of the system.

As we noted in our November 5, 1982 memorandum and order (at 2-3), the Licensing Board found that the emergency feedwater system at TMI-1 was not sufficiently reliable, by itself, to provide adequate protection of the public health and safety. This conclusion was based essentially on a quantitative probabilistic analysis of the so-called "failure" on demand of the emergency feedwater system. It also appears to be based, at least in part, upon the Board's observation that the emergency feedwater system will not be fully safety-grade at restart. The Board concluded, as a result, that feed and bleed is needed as a backup. LBP-81-59, *supra*, 14 NRC at 1370-72 (1981).

As discussed above, natural circulation (either liquid or boiler-condenser mode) must be maintained to transport decay heat from the reactor core to the steam generators to provide adequate core cooling using the emergency feedwater system. The record indicates that liquid natural circulation may be lost during a small-break LOCA. See p. 1772, *supra*. Our preliminary view was that the viability of the boiler-condenser or two-phase mode of natural circulation cooling had not been adequately proved on the record. To remove steam and to help reestablish single-phase natural circulation cooling, we suggested that the vents in the hot leg high points could be used. We also suggested that an individual be assigned to operate the emergency feedwater flow control valves manually in the event that the Integrated Control System (ICS), which is not safety-grade, failed to operate. We indicated that, with these two modifications in place, we would be prepared to find the emergency feedwater system sufficiently reliable that feed and bleed would not be required. Memorandum and Order of November 5, 1982 at 9-10.[5] Because these measures were not fully considered at the hearing, we requested, among other things, "the parties' views concerning the sufficiency of our proposed requirements."

We also offered our preliminary view that there is insufficient evidence of record to support the Board's finding that feed and bleed is a viable means of decay

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[5] The licensee challenged as inappropriate the Licensing Board's reliance on quantitative analysis as a basis for concluding that the emergency feedwater system is unreliable. While we have reached no final conclusions with respect to this aspect of the licensee's argument on appeal, we believe that the record is adequate concerning the reliability of the emergency feedwater system in the event of a small-break LOCA or a loss of main feedwater at TMI-1.

Very recently, we received two Board Notifications (BN-82-118 and BN-82-118A) which discuss a report by a staff consultant that the emergency feedwater system at TMI-1 may lack the capability to withstand a postulated safe shutdown earthquake. (Although those Board Notifications are dated November 22, 1982 and December 9, 1982, respectively, we did not receive them until December 22, 1982.) The scope of this proceeding does not include seismic qualification of the EFW system. This information does raise the possibility, however, that reliance may have to be placed on other plant systems to provide adequate core cooling. We do not address seismic qualification of the EFW system in this memorandum and order. That matter will be considered by the NRC staff and the Commission outside the adjudicatory process.

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heat removal at TMI-1. We noted, in addition, that information supplied us by the staff in two recent Board notifications tended to undermine the Licensing Board's conclusion.[6] As we discuss later, the staff's response to our November 5, 1982 order lends support to its position that feed and bleed would provide adequate core cooling at TMI-1.

ANALYSIS

The responses we received raise many questions which we believe must be answered before we can reach a final decision on these matters. There are also a number of inconsistencies in the evidence of record which, in our judgment, must be satisfactorily resolved in order to facilitate our review. Our discussion of them follows.

A. Emergency Feedwater System Reliability

As mentioned previously, the Licensing Board found that the emergency feedwater system, even after it is modified to full safety-grade status, will not be sufficiently reliable to protect the public without feed and bleed as a backup. See p. 1773, *supra*. UCS endorses that finding and argues that our proposed modifications are therefore not sufficient without the availability of feed and bleed.[7]

In contrast, the licensee points out that it has appealed the Licensing Board's decision on emergency feedwater reliability and that the staff has supported that appeal. The licensee urges that we modify the Board's decision to hold that the short- and long-term actions are sufficient to protect the public health and safety. In short, the licensee argues that the emergency feedwater system is sufficiently reliable and that feed and bleed cooling is not necessary.[8] Although not expressly stated as such, the staff's position appears to be the same for it, too, argues that reliance on feed and bleed is not required.[9]

It is not our intention to address the entire question of emergency feedwater system reliability now. Nor is it necessary to do so. We shall consider that subject, including the licensee's argument regarding the Board's reliance on quantitative analysis, more fully in our final decision addressing all of the design issues that are before us. At this juncture, it should suffice to note that because of our concerns that steam voids may interrupt liquid natural circulation and that the boiler-condenser process may not be a viable means of decay heat removal (see pp.

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[6] See BN-82-93 (Sept. 14, 1982); BN-82-107 (Oct. 22, 1982).

[7] See UCS Response at 3.

[8] See Licensee Response at 4-5, 9-12.

[9] See Staff Response at 8. But see note 5, *supra*.

1777-78, 1781-85, *infra*), we are currently unable to determine whether the short-term actions to improve emergency feedwater system reliability are sufficient to protect the public.

In our judgment, there are three ways (and perhaps others) in which our concerns might be resolved: (1) the vents to be installed in the hot leg high points could be shown to be useful for successfully removing steam and restoring liquid natural circulation; (2) the boiler-condenser process could be adequately demonstrated as a viable means of decay heat removal at TMI-1; or (3) the viability of feed and bleed as a means of decay heat removal could be sufficiently proven. As we explain in the balance of this memorandum and order, we would need additional evidence before we could accept any one of those propositions in this case. Contrary to the licensee's suggestion (Licensee Response at 5), our conclusion does not depend upon whether or when the emergency feedwater system at TMI-1 will be fully safety-grade. Rather, it stems from our judgment that the problems presented by steam voiding must be adequately resolved for both the short and the long term.

As we mentioned above, the staff and licensee would have us rely upon the emergency feedwater system to remove core decay heat in the event of a small-break LOCA or a main feedwater transient. See p. 1774, *supra*. See also Tr. 4816-18 (Keaten); Tr. 5016, 5502-03 (Jensen); Tr. 5645-47 (Lanese); Tr. 6146 (Wermiel). We must reiterate that reliance upon the emergency feedwater system necessarily involves reliance upon natural circulation (liquid or boiler-condenser mode) to transport the decay heat from the reactor core to the steam generators. Although the system is undergoing extensive modification, it will not be fully safety-grade at restart. Capodanno, *et al.*, fol. Tr. 5642, at 1.

Because the record was unclear regarding the status of the EFW modifications, we requested information on this subject prior to oral argument.[10] The licensee provided a list of the modifications that will be completed before restart and those to be completed during the next refueling outage.[11] The staff indicated that the EFW system will be fully safety-grade by the end of the next refueling outage.[12]

One of the near-term modifications which the licensee listed was the provision of operator control of emergency feedwater flow to each steam generator independent of the Integrated Control System (ICS).[13] In our November 5, 1982 memorandum and order (at 9-10), we discussed our concern for the dependence of the EFW system on the non safety-grade ICS to operate the EFW flow control valves. We noted that the record was unclear as to the safety-grade status of the EFW manual control capability. *Id.* at 9 n.13. See, *e.g.*, Tr. 5580-81 (Jensen), 5710-11 (Lanese), 7106-07 (Broughton), 7705 (Keaten); Staff Ex. 1 at C1-11. The licensee responds that the manual control stations will be powered from a Class 1E (*i.e.*, high reliability) power supply and a single failure in the manual circuits will not result in a loss of system function.[14] We interpret this response to mean that the manual control capability will not be fully safety-grade but is considered by the licensee to be highly reliable. The staff, however, asserts that a "safety-grade manual control capability" exists at TMI-1.[15] This apparent inconsistency leads us to wonder whether (1) equipment projected to be safety-grade prior to restart may not actually be so, and (2) equipment that was not intended to be safety-grade by restart may be so. These two questions must be resolved by evidence of record.

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[10] See our Order of July 14, 1982 (unpublished) at 3-4.

[11] Licensee's Response to Appeal Board Order of July 14, 1982 (August 12, 1982) at 9-13.

[12] Affidavit of Richard H. Jacobs (Aug. 6, 1982) at 4-5, attached to NRC Staff's Response to Appeal Board's Order of July 14, 1982 (August 9, 1982).

[13] Licensee's Response (August 12, 1982) at 10.

In our November 5, 1982 memorandum and order (at 9), we proposed the assignment of an individual whose sole function would be to operate the flow control valves manually following the onset of an accident.[16] We indicated that this assignment would resolve our concern for the dependence of the emergency feedwater system on the nonsafety-grade ICS. The licensee referred us to plant procedures that require the control room operator to dispatch an auxiliary operator to the flow control valves for any EFW pump auto-start condition. See Lic. Ex. 49 at 2.0, 6.0; Lic. Ex. 48 at 10.0, 30.0.[17] If the emergency feedwater flow were not achieved by the control room operator, the auxiliary operator would take manual control of the flow control valves.[18] We are satisfied with the plant procedures for manual control of the EFW flow control valves. Provided that they are retained for use by TMI-1 operators, we consider our concern regarding the capability for manual control of emergency feedwater to be resolved.

UCS argues that the emergency feedwater control capability is not safety-grade because there is only one flow control valve for each steam generator.[19] It claims that a break in one of the steam generators would cause isolation of that steam generator, with the result that a single failure of the flow control valve to the other steam generator would cause a total loss of feedwater. UCS asserts that this possibility would exist regardless of whether emergency feedwater control is manual or automatic.

We disagree. As explained above, we are satisfied with the licensee's procedures for manual control of the valves as a short-term measure before the emergen-

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[14] Licensee Response at 13.

[15] Staff Response at 3.

[16] The licensee appears to have interpreted this proposal to mean the stationing of an operator at the valves on a full-time basis. See Licensee Response at 12 n.14. However, our intent was the assignment of this duty to an individual only if an accident should occur.

[17] *Id.* at 14.

[18] *Id.*

[19] UCS Response at 2. One of the long-term modifications to achieve a fully safety-grade EFW system is the provision for parallel EFW flow control valves to each steam generator. See Wermiel and Curry, fol. Tr. 16,718, at 25, 30.

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cy feedwater system is fully safety-grade. A single electrical failure of a flow control valve could be overcome by manual control of the valve handwheel. A single mechanical failure of the flow control valve would not affect the operability of the entire EFW system, which should provide adequate core cooling.[20] In addition, the licensee is modifying the flow control valves prior to restart to provide backup instrument air supplies with provisions for the valves to move to the open position upon loss of instrument air. See Lic. Ex. 1 at 2.1-25-26; Lic. Ex. 15 at 6-7. As a result, we consider the manual control capability together with the licensee's short-term modifications to make the EFW flow control valves sufficiently reliable until the emergency feedwater system is modified to full safety-grade status. We shall address the long-term modifications in our final decision.[21]

B. Liquid Natural Circulation

As discussed earlier, natural circulation (either liquid or boiler-condenser mode) must transport decay heat from the reactor core to the steam generators for the core to be adequately cooled using the emergency feedwater system. In this section, we discuss maintenance of liquid natural circulation and the possible use of the vents. Our concerns for the viability of the boiler-condenser mode are discussed in the following section.

Analyses indicate that liquid natural circulation would be interrupted by steam formation for any break in the reactor coolant system larger than about 0.005 ft^2 if only one HPI pump were operating and about 0.01 ft^2 if two HPI pumps were operating. Tr. 4683-84 (Jones).[22] Steam bubbles would collect at the high points of the primary system. It may be possible to remove this steam by use of the reactor coolant pumps or by ejection from high point vents. Tr. 4617, 4623-24 (Jones).

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[20] General Design Criteria 34 (Residual heat removal) and 35 (Emergency core cooling) of Appendix A to 10 CFR Part 50 require that adequate core cooling be available in the event of a "single failure." A single failure is defined as "an occurrence which results in the loss of capability of a component to perform its intended safety functions. Multiple failures resulting from a single occurrence are considered to be a single failure." 10 CFR Part 50, Appendix A, Definitions and Explanations. Staff witness Jensen testified that two HPI pumps would provide adequate core cooling even if emergency feedwater were not available. Tr. 5588-89. See also our discussion of feed and bleed (pp. 1785-88, *infra*).

[21] At that time, we shall also address UCS' argument on appeal that the Licensing Board improperly delegated its decisionmaking authority to the staff to provide a long-term solution to the steam generator bypass logic problem. See UCS Brief on Exceptions to the Partial Initial Decision of December 14, 1981 (March 12, 1982) (hereinafter referred to as UCS Brief) at 58.

[22] The location of the break can significantly affect the ability of emergency core cooling systems to safely mitigate an accident. B&W analyses indicate that the reactor coolant pump discharge is the worst location for a small break because substantial loss of HPI flow out the break will occur. Lic. Ex. 5 at Section 6.2.1.3.2. Where witnesses have not specified the break location, we have assumed it to be the reactor coolant pump discharge.

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The reactor coolant pumps are not safety-grade and, as a result, cannot be relied upon to perform this function. Therefore, we concentrate our discussion on the vents to be installed in the hot leg high points.

The parties are in agreement that the capability of the hot leg vents to remove steam from the high points of the hot legs sufficiently to re-establish natural circulation is not demonstrated on the record. In its response to our November 5, 1982 memorandum and order, the licensee goes further to state that "the record at best casts doubt on the utility of these vents to remove steam and re-establish natural circulation."[23]

The licensee and UCS cite staff statements at oral argument to the effect that calculations performed at Los Alamos National Laboratory indicate that the vents may not be useful in restoring natural circulation.[24] See App. Tr. 291-92 (Sheron). We note, however, that those calculations assumed a vent of approximately 1 centimeter (0.394 in.) in diameter, whereas the vents to be installed at TMI-1 were reported to be 0.8 inches in diameter.[25] The flow rates associated with these different vent sizes may have a significant effect on the potential for successful use of the vents to promote natural circulation. In order to confirm or reject the capability of the vents, additional tests with more realistic plant characteristics would be necessary.

UCS suggests that opening the vents, with the resultant loss of pressure, might cause more water to flash to steam if there is inadequate margin to saturation.[26] The staff also argues that the vents would be "both unnecessary and ineffective" in re-establishing liquid natural circulation.[27] The staff then indicates, however, that the vents may be beneficial in recovering liquid natural circulation "from a condition of prior operation in feed and bleed or boiler-condenser natural circulation."[28] Although the staff's argument is not entirely clear, we understand it to be similar to that advanced by UCS — *i.e.*, that the vents would not be useful when the primary coolant is saturated because coolant would flash to steam as a result of depressurization when the vents were opened.

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[23] Licensee Response at 39. The licensee argues that its witness Jones was referring only to the TMI-2 accident in discussing the use of the vents to restore natural circulation. *Id.* at 40. See Tr. 4617, 4623-24. While we agree that Mr. Jones initially addressed the circumstances of the TMI-2 accident, his testimony can be fairly read to include the general use of the vents to promote liquid natural circulation at TMI-1. See Tr. 4623-24. Later, Mr. Jones also discussed the use of the vents to assist in refilling the primary system and restoring natural circulation. Tr. 10,778.

[24] Licensee Response at 40; UCS Response at 4.

[25] See Board Notification BN-82-65 (July 9, 1982), Enclosure 1 at 27, 40-41. See also Tr. 4865 (Jones). For perspective, the size of the PORV is 1.05 in.^{2} (*i.e.*, about 1.15 inches diameter). Tr. 5090 (Jones).

[26] UCS Response at 4-5.

[27] Affidavit of Walton L. Jensen, Jr. (Nov. 22, 1982) at 3, attached to Staff Response.

[28] *Id.*

The staff also discusses the possible use of the vents to perform the "bleed" function during feed and bleed cooling.[29] Staff calculations indicate that the vents would be too small to provide adequate steam relief for a significant period after reactor shutdown.[30] Similarly, UCS suggests that "some of the same difficulties with feed and bleed demonstrated by the Semiscale tests S-SR-1 and S-SR-2 might also be encountered in attempting to 'bleed' the steam accumulated in the hot leg through the vents."[31] UCS argues that, depending on the conditions present, flow through the vents could be two-phase or liquid with a potential net loss in reactor coolant system inventory.

It is possible that, during saturated conditions in the hot legs, the vents might not be useful in removing sufficient excess steam to restore natural circulation. It is also possible that the vents might not be of use for feed and bleed immediately after reactor shutdown. These matters must be explored further before any firm conclusions can be drawn.

The licensee asserts that the Commission has established the purpose of the vents and the schedule for their installation in connection with its hydrogen control rulemaking.[32] The staff also observes that the vents are designed to remove noncondensible gases in accordance with 10 CFR §50.44.[33] While it is true that the Commission has required the installation of high point vents in connection with hydrogen control, it is not at all clear to us that the only permissible use for the vents is the removal of noncondensible gases.[34] The licensee itself has indicated that the vents could also provide an alternate means of reactor coolant removal when release outside the containment building is not permitted because of high radioactivity in the reactor coolant. See Lic. Ex. 1 at 2.1-38e.

We fully appreciate the Commission's admonition — recently reaffirmed in CLI-82-32, 16 NRC 1243 (1982) — that the issue of whether the licensee has satisfactorily completed necessary short-term or long-term items shall be determined by the NRC staff and the Commission outside the adjudicatory process. We have no intention of altering any schedules the staff or the Commission might establish for the completion of required items or deciding whether various required

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[29] *Id.* at 4-7.

[30] *Id.* at 4. We note that the vent size (0.5 inches diameter) specified by staff witness Jensen is significantly smaller than that (0.8 inches) indicated by the licensee in its testimony. See Tr. 4865 (Jones).

[31] UCS Response at 4.

[32] See Licensee Response at 40-42.

[33] Staff Response at 4.

[34] We note, for example, that in an enclosure (at 1) to a letter from NRC Chairman Palladino to the Honorable Morris K. Udall (July 30, 1981) discussing the formation of a steam bubble at TMI-2 in September 1977 during hot functional testing, it was stated that the "ability to cope with incidents involving gases or vapor in the system is now being provided through installation of high point vents."

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steps have been completed.[35] Our responsibility, however, as the Commission specifically pointed out in CLI-82-32, 16 NRC 1243-44, is to determine "what short-term or long-term actions are necessary and sufficient to adequately protect the public health and safety." Consistent with that mandate, we believe we have the authority to determine (should the evidence support such determination) that the installation of high point vents prior to restart as a means of removing excess steam to assure restoration of natural circulation is a necessary short-term action which must be taken before we can find that the public health and safety is adequately protected.

As UCS correctly points out, significant questions remain regarding the adequacy of operator training and emergency procedures for use of the high point vents.[36] The licensee states that the vents are intended to be used during inadequate core cooling only to remove noncondensible gases.[37] In addition, the licensee asserts that its operators will not be trained to use the high point vents to remove steam.[38] This is inconsistent with the staff position stated in a March 25, 1982 letter from the Director of the Division of Licensing, Office of Nuclear Reactor Regulation to the Babcock & Wilcox (B&W) Owners Group that was the result of a staff meeting with the Owners Group.[39] Thus, we find the licensee's assertion unsettling. In contrast, the owner of another B&W plant, Rancho Seco, has provided information to the staff discussing the possible use of the hot leg vents to remove steam during "normal" (*i.e.*, adequate core cooling) small-break LOCAs.[40]

Finally, the licensee indicates that there is not sufficient time to construct and install the hot leg high point vent system prior to restart.[41] The licensee explains that major and essential pieces of equipment will have been received by the end of this year but that the detailed engineering is not yet complete. Construction and installation would then take some four to six months.[42]

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[35] The Commission, for example, has decided on a timetable for the installation of high point vents as a means of removing noncondensible gases; such vents may be installed no later than the first refueling outage after restart. In such circumstances, we may not require, as a condition of restart, that the removal of noncondensible gases by means of high point vents be available.

[36] See UCS Response at 5.

[37] See Licensee Response at 43.

[38] *Id.* at 43 n.34.

[39] The letter states that, in the staff's understanding, "operators will be trained to use the high point vents to remove any steam bubbles." Letter from Darrell G. Eisenhut to J. J. Mattimoe, Enclosure at 3-4. In this connection, we note that the release of noncondensible gases is likely to be accompanied by the formation and release of steam.

[40] See letter from J. J. Mattimoe to Director of Nuclear Reactor Regulation (July 1, 1981) "Position Paper on Reactor Vessel Head Vents" at Section 4.1.2; letter from W. Walbridge to Director of Nuclear Reactor Regulation (March 4, 1982), Enclosure at 8. Both letters are part of the record in the Rancho Seco special proceeding (Docket No. 50-312), which is now undergoing Appeal Board review. See, *e.g.*, *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-703, 16 NRC 1533 (1982).

[41] Licensee Response at 44.

[42] *Id.* We note that this statement appears to be inconsistent with that made to Commissioner Gilinsky during a recent site visit. See Memorandum to File from Edward Abbott (Nov. 5, 1982) at 3, which states that "[m]uch of the electrical work for the vent modification is complete and the hardware is on-site."

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There is conflicting evidence concerning whether the vents might be useful in removing steam voids from the high points of the primary system and in restoring liquid natural circulation. Such a procedure might be useful, for example, if steam voids are produced during a small-break LOCA after the HPI pumps have refilled the primary system or during plant cooldown.[43] As the foregoing makes clear, however, many open questions remain and some further analysis on the record is required.

C. Two-Phase Natural Circulation (Boiler-Condenser Process)

In our November 5, 1982 memorandum and order, we indicated our tentative view that the ability of the boiler-condenser mode of natural circulation to remove enough decay heat to prevent core damage had not been adequately demonstrated on the record.[44] UCS apparently shares that conclusion but does not comment on it in detail.[45] The licensee and the staff, however, argue that there is no basis for our view.[46]

The licensee argues that the process was endorsed by witnesses for both the staff and the licensee, and that no witness presented testimony questioning the efficacy of that process.[47] Licensee witness Jones testified, however, that there have been no tests of this method of decay heat removal at TMI-1 and that the licensee does not intend to conduct any because there is insufficient instrumentation to control the process. Tr. 4687-88. In addition, there has been no experience with the boiler-condenser process as a stable cooling mode. Tr. 4685-87 (Jones). In our judgment, this testimony raises doubts about whether the process can be relied upon to provide adequate protection of the public health and safety in the event of an accident.

The licensee also asserts that UCS has abandoned its interest in questioning the adequacy of the licensee's small-break LOCA analysis.[48] That argument is somewhat misleading, for UCS filed and briefed several exceptions concerning the boiler-condenser mode.[49] UCS would have us reject the Licensing Board's conclusion that the TMI-2 accident did not reveal a problem with reliance on natural circulation. That conclusion, UCS asserts, was based in part upon the incorrect premise that the boiler-condenser mode will be established and will remove sufficient core decay heat.[50] In addition, UCS takes exception to the Board's finding that the boiler-condenser mode meets the requirements of General Design Criteria 34 and 35.[51] See note 20, *supra*. UCS charges that the Board failed to confront evidence demonstrating that the boiler-condenser mode is not sufficiently reliable because (1) there is no instrumentation to determine primary water level in the steam generators;[52] (2) emergency procedures require refilling of the primary system, which will prevent the establishment of the boiler-condenser mode;[53] and (3) the effectiveness of that process has not been tested.[54] Finally, UCS argues that the boiler-condenser mode is not sufficiently reliable because of its dependence on the emergency feedwater system.[55]

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[43] On June 11, 1980, a steam bubble formed in the vessel head during a natural circulation cooldown at St. Lucie. See IE Circular No. 80-15 (June 20, 1980). Also, IE Circular No. 81-10 (July 2, 1981) discusses steam voiding in the reactor coolant system during decay heat removal cooldown.

[44] See our Memorandum and Order of November 5, 1982 at 7 n.15, referencing testimony by licensee witness Jones that this mode had been predicted by computer modeling but no tests had been performed to demonstrate its viability. See Tr. 4687-88, 4691, 4702; Jones and Broughton (Board Question on UCS Contention 8), fol. Tr. 5038, at 16-17. We also noted that the Advisory Committee on Reactor Safeguards and the staff have subsequently expressed concern for the modeling of the dynamic thermal hydraulic behavior of Babcock & Wilcox (B&W) plants during small-break loss-of-coolant accidents. See, *e.g.*, letter from P. Shewmon to William J. Dircks (October 13, 1982); letter from Darrell G. Eisenhut to J. J. Mattimoe (March 25, 1982).

[45] See UCS Response at 1.

[46] See Licensee Response at 25; Staff Response at 2, 6.

[47] Licensee Response at 17.

[48] *Id.* at 19.

The licensee maintains that the B&W emergency core cooling system (ECCS) evaluation model is an NRC-approved computer code under Appendix K to 10 CFR Part 50, and therefore is not open to challenge in this proceeding.[56] The B&W ECCS evaluation model was approved in September 1978 and no changes have been made since then for demonstrating compliance with 10 CFR §50.46. Tr. 5159 (Jones). Accident analyses performed prior to the TMI-2 accident did not include breaks smaller than 0.04 ft^2. Tr. 4691-92 (Jones); Tr. 5505-06 (Jensen). In those analyses, reliance on the boiler-condenser process was unnecessary because the break was sufficiently large to permit adequate removal of decay heat through the break itself. Tr. 4691-92 (Jones). Following the TMI-2 accident, new analyses were performed, primarily to provide guidance for the preparation of operator procedures. Jones and Broughton (Board Question on UCS Contention 8), fol. Tr. 5038, at 4-5; Tr. 5517-18 (Jensen). In addition, the staff group responsible for review of the B&W small-break LOCA analyses, the Bulletins and Orders (B&O) Task Force, did not review the adequacy of the Appendix K model. Tr. 5544-46

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[49] See UCS Brief at 3, 5, 8-9, 15.

[50] *Id.* at 2-3.

[51] *Id.* at 8-9. See LBP-81-59, *supra*, 14 NRC at 1230.

[52] This issue will be addressed in our final decision on design issues.

[53] UCS explains that refilling the primary system, as the operators are directed to do following a LOCA, would block the steam condensing surface in the steam generators and preclude boiler-condenser cooling. UCS Brief at 8. We agree that, if the primary system could be refilled, this would preclude the boiler-condenser mode until the primary level dropped sufficiently to expose a condensing surface. However, if the primary system can be kept full, the boiler-condenser mode would not be needed.

[54] *Id.* at 8-9.

[55] *Id.* at 9, 15. Unlike that of UCS, our concern for the viability of the boiler-condenser mode is not related to the reliability of the emergency feedwater system.

[56] Licensee Response at 17-19.

(Jensen).[57] Thus, it is not altogether clear to us that a challenge to the ability of the model to predict correctly boiler-condenser flow can be considered an impermissible attack on the Commission's regulations.

Staff witness Jensen testified that questions had been raised by other members of the B&O Task Force with regard to the degree to which data predicted by the models had been compared with experimental data in the small-break range. Tr. 5583-84. The staff's generic small-break LOCA analysis for B&W reactors states that the "methods must be revised and verified before they can be considered for NRC approval under 10 CFR 50.46." Board Exh. 4 at 2-3. Staff witness Jensen appeared to interpret this recommendation to mean that the models will be reviewed by the staff as additional experimental data become available. Tr. 5021-24. Licensee witness Jones disagreed with staff recommendations concerning the need for experimental verification of the B&W analyses. See generally Tr. 5221-30.

Staff witness Jensen believed that the smallest break that must be analyzed for the purpose of verifying compliance with Appendix K or the limits of 10 CFR §50.46 are breaks slightly smaller than the most severe in order to show that the most severe has been identified. Tr. 5527.[58] The smallest break that was reviewed for the purpose of conformance with Appendix K was 0.04 ft^2. Tr. 5538. Mr. Jensen also indicated that the analysis of a 0.005 ft^2 break was performed for the purpose of providing guidance for operator actions in the event of a small-break LOCA. Tr. 5527. We do not understand the basis for staff's position that breaks of approximately 0.07 ft^2 are the only ones that must be analyzed in order to demonstrate compliance with the regulations. As the licensee acknowledges, the boiler-condenser mode may be needed for breaks smaller than approximately 0.02 ft^2 to help provide core cooling if liquid natural circulation is lost.[59] Therefore, it would appear that analyses must be performed to demonstrate that the boiler-condenser mode is adequate to prevent the limits of 10 CFR §50.46 from being exceeded during these small-break accidents.

The licensee cites testimony that experimental tests of the boiler-condenser mode have been performed for primary systems with U-tube steam generators.[60] See Ross and Capra, fol. Tr. 15,806, at 34-35; Tr. 5223-24 (Jones). The staff also responds that tests involving U-tube steam generators demonstrate the effectiveness of the boiler-condenser mode for TMI-1 because the same basic heat transfer mechanisms would occur.[61] While these tests confirm the effectiveness of the boiler-condenser mode for plants with U-tube steam generators, we are not convinced that they establish the viability of this mode for plants like TMI that have a different primary system piping configuration and straight-through steam generators.[62]

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[57] The staff provided the results of its review of the B&W small-break LOCA analyses in NUREG-0565, Generic Evaluation of Small Break Loss-of-Coolant Accident Behavior in Babcock & Wilcox Designed 177-FA Operating Plants (January 1980). NUREG-0565 is included in the record as Board Exhibit 4.

[58] The most "severe" break (*i.e.*, that break producing the highest peak cladding temperature) has been identified by analysis to be 0.07 ft^2 at the reactor coolant pump discharge. Jensen, fol. Tr. 5496, at 5-6; Lic. Ex. 5 at Section 6.2.1.3.3.

[59] Licensee Response at 16.

[60] *Id.* at 20-21.

In its response, the staff explains that its need for additional experimental data does not contradict its original conclusion on the efficacy of the boiler-condenser mode.[63] The licensee makes a similar argument, quoting staff statements made at oral argument concerning the need for long-term model confirmation.[64] See App. Tr. 284 (Sheron). At oral argument, the staff indicated that it did not have confirmation of the process of trapping a steam bubble in the hot legs and that the re-establishment of natural circulation had not been demonstrated experimentally. App. Tr. 287 (Sheron).

The licensee asserted below that the boiler-condenser mode occurred during the TMI-2 accident.[65] See Tr. 4627-30, 4685-86 (Jones). But its witness Jones conceded that the first time at which it can be documented that adequate core cooling was established at TMI-2 was at 16 hours after the onset of the accident, when the reactor coolant pumps were started. Tr. 4655. Therefore, we do not believe that the boiler-condenser mode can be considered viable on the basis of the TMI-2 accident experience alone.

Our concern is not with the mechanics of the boiler-condenser process but rather with the ability of this mode to remove sufficient decay heat to adequately provide core cooling. The licensee relies on testimony to the effect that tests are not needed to confirm that the basic phenomenon works but may be used to confirm the accuracy of the code in predicting the amount of heat transfer for a given system heat condition.[66] See Jones and Broughton (Board Question on UCS Contention 8), fol. Tr. 5038 at 16-17. As mentioned earlier, the licensee does not plan to conduct any such tests. See p. 1781, *supra*.

From the record, it appears that the boiler-condenser mode may be needed only for a limited time period during certain small-break LOCAs.[67] Once the core decay heat rate has dropped sufficiently, one HPI pump could supply adequate flow to provide core cooling without the aid of natural circulation.[68] For example, analyses indicate that one HPI pump could match core decay heat after about one hour for a 0.005 ft^2 break with EFW available. Tr. 5549-53 (Jensen). See also Lic. Ex. 5 at Section 6.2.4.3.3. It is for the time period before the available HPI flow could match the boil-off rate of core decay heat that we believe additional analysis is needed in order to confirm that the boiler-condenser mode can adequately remove core decay heat.

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[61] Affidavit of Walton L. Jensen, Jr. at 2-3, attached to Staff Response.

[62] In this regard we note that the absence of a test facility that conforms to the TMI-1 design is one of the concerns discussed in recent ACRS and staff correspondence. See letter from P. Shewmon to William J. Dircks (October 13, 1982); letter from Darrell G. Eisenhut to J. J. Mattimoe (March 25, 1982).

[63] Affidavit of Walton L. Jensen, Jr. at 3, attached to Staff Response.

[64] Licensee Response at 24-25.

[65] *Id.* at 20.

[66] *Id.* at 21-22. Licensee witness Jones claimed, without substantiation, that there may be significant conservatism in the model. Tr. 5293-95.

[67] Natural circulation would not be needed for breaks larger than approximately 0.01 ft^2 because the break could adequately remove core decay heat. Jensen (UCS Contention 1) fol. Tr. 4913, at 5; Tr. 4930-31 (Jensen); Tr. 4852-54 (Jones).

D. Feed and Bleed

As mentioned previously, the Licensing Board relied on feed and bleed as a backup to the emergency feedwater system, which it considered not sufficiently reliable. Based on the testimony of several staff and licensee witnesses,[69] the Licensing Board found that, in the event of a failure of the emergency feedwater system, the core could be adequately cooled using feed and bleed while repairs to the emergency feedwater system were being made. LBP-81-59, *supra*, 14 NRC at 1370. We believe that there is insufficient evidence of record at the present time to support the Licensing Board's conclusion. We reiterate that our interest in feed and bleed as a backup is not based upon the Board's conclusions regarding emergency feedwater reliability. Rather, it stems from our judgment that the boiler-condenser mode of core cooling has not been adequately demonstrated.

Our primary concern with the viability of feed and bleed does not involve the reliability of the operators or plant equipment. The record appears to contain sufficient evidence to support a conclusion that the operations associated with feed and bleed are relatively simple and employ, for the most part, safety-grade systems. See, *e.g.*, Keaten and Jones, fol. Tr. 4588, at 12; Tr. 4734-35, 4777-830 (Keaten and Jones); Wermiel, *et al.*, fol. Tr. 6035, at 5-7; Keaten, *et al.*, fol. Tr. 16,552, at 10-11. See also Licensee Response at 27-29.[70]

Nevertheless, we are still somewhat troubled by the lack of experimental verification of the process predicted by computer models. Both the staff and the licensee argue that computer analyses predict the capability of feed and bleed to adequately provide core cooling in the event of various small breaks.[71] See, *e.g.*, Jones, fol. Tr. 4589, at 1-2; Jones and Broughton (UCS Contention 8 and ECNP

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[68] Analyses indicate that two HPI pumps would provide adequate core cooling for any small-break LOCA even if the EFW system were not available. Tr. 5588-89 (Jensen). However, this would not meet the Commission's regulations concerning the assumption of a single failure. See generally 10 CFR Part 50, Appendix A.

[69] See, *e.g.*, Jones, fol. Tr. 4589, at 1-4; Tr. 5586-89 (Jensen); Capodanno, *et al.*, fol. Tr. 5642, at 1-3, 11; Tr. 6200-01, 16,734-36, 16,846-47, 16,893-94 (Wermiel); Tr. 7704-09, 7806 (Keaten).

[70] These matters will be discussed further in our final decision on the technical issues in this proceeding.

[71] Staff Response at 3-4; Licensee Response at 30, 37-39.

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Contention 1(e)), fol. Tr. 5038, at 4-8; Jensen (UCS Contention 1), fol. Tr. 4913, at 9. See generally Lic. Exs. 3-9 and 13. No experimental verification of these analyses has been introduced into the record. We identified our interest in such experimental verification in questions posed prior to and at oral argument, in which we made specific reference to the loss-of-fluid test (LOFT) facility.[72] The staff construed our requests to be limited to LOFT tests and failed to mention the Semiscale test facility.[73]

On September 14, 1982, two weeks after oral argument, we received Board Notification BN-82-93, which provided information on recent experimental testing of feed and bleed at the Semiscale facility. The preliminary report from EG&G attached to BN-82-93 described a test that led to an uncovering of the core. It concluded that the results "tend to support a concern about the relative tenuousness of the process."[74] Also included was a staff memorandum that briefly discussed the test results. It stated: "Although neither the staff nor the licensees or applicants have ever relied upon feed and bleed in order to meet the Commission's regulations, and although the staff has never concluded that all plants with installed HPI and safety-relief systems can successfully 'feed and bleed,' we believe that there is an inherent margin of safety attributable to a feed and bleed capability."[75]

This statement appears to be inconsistent with the testimony of staff and licensee witnesses that feed and bleed is needed in certain situations.[76] While in general the

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[72] See, *e.g.*, our Order of July 14, 1982 at 14; App. Tr. 206-12, 292-96. See generally App. Tr. 282-98.

[73] See Affidavit of Walton L. Jensen, Jr. (Aug. 6, 1982) at 10, attached to NRC Staff Response to Appeal Board's Order of July 14, 1982 (August 9, 1982).

[74] Letter from P. North, Manager of Water Reactor Research Test Facilities Division, EG&G, to R. E. Tiller, Director of Reactor Operations and Programs Division, Idaho Operations Office, Department of Energy (Aug. 6, 1982) at 9, attached to BN-82-93, note 6, *supra* (hereinafter referred to as EG&G letter). EG&G is a research organization that is conducting core cooling tests for the NRC at the Semiscale facility.

[75] Memorandum from Roger J. Mattson to Darrell Eisenhut (Aug. 30, 1982) at 1, attached to BN-82-93, note 6, *supra*.

[76] The following are examples of testimony by staff and licensee witnesses that imply dependence upon feed and bleed in the event of a main feedwater transient or a small-break loss-of-coolant accident:

> Staff witness Jensen agreed that, assuming no emergency feedwater, there are certain scenarios in which feed and bleed is relied on in order to meet 10 CFR §50.46. Tr. 5587.
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> Licensee witness Keaten testified that "in a supplement to the FSAR there is a specific discussion of the fact that if the emergency feedwater system is not available, that the core can be adequately cooled by the feed and bleed cooling mode." Tr. 7806.
>
> Staff witness Curry indicated that the probability of core damage must take into consideration the reliability of both the emergency feedwater system and the feed and bleed option. Tr. 16,723-24.
>
> Staff witness Wermiel testified that "when we look at the emergency feedwater system for mitigating feedwater transients and the scenarios that could get you to core melt, we recognized that there is a feed and bleed backup capability to the system." Tr. 16,734.
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> Staff witness Wermiel stated that feed and bleed was part of the backup in the interim to compensate for the lack of safety-grade emergency feedwater automatic initiation. Tr. 16,846-47, 16,869-70. We understand that the staff considers automatic initiation to include control of the EFW flow. See Tr. 17,014-15 (Wermiel).

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staff and licensees may not rely upon feed and bleed to meet the regulations, the effectiveness of feed and bleed is of special significance in this proceeding, because of the testimony presented and the Licensing Board's findings.

On October 22, 1982, the staff provided us with a second EG&G report of two Semiscale tests of feed and bleed and the staff's analysis of the results in Board Notification BN-82-107. The first test, S-SR-1, was performed using "high head" HPI pumps similar to those at TMI-1. This test was terminated as a result of "operational problems with uncontrolled coolant leakage."[77] Semiscale test S-SR-2, which used "low head" HPI pumps, resulted in excessive heating of the core simulator. The report concluded that feed and bleed appears feasible "but its viability depends on plant-specific characteristics and postulated scenarios."[78] As we indicated in our November 5, 1982 memorandum and order (at 6), however, we believe that these tests raise questions about the viability of the feed and bleed option at TMI-1.

In its response to our order, UCS indicates its agreement with that view but provides no comments beyond those it already made in response to the Board Notifications and in reply to the other parties' response.[79] In its response to Board Notification BN-82-93, UCS noted that one conclusion of the EG&G letter is that feed and bleed is theoretically possible only within a certain band of primary system pressure.[80] UCS asserts that the record contains no evidence that an analysis was performed to demonstrate that such a pressure band exists for TMI-1.[81] The licensee, in its reply to the UCS response, explains that there is not a concern at TMI-1 for maneuvering the plant into a certain pressure band because the high head HPI pumps can provide cooling flow up to the safety relief valve setpoints.[82] We agree that the existence of high head HPI pumps at TMI-1 appears to remove the concern for a feasible feed and bleed pressure band. We nevertheless believe that a plant-specific analysis of feed and bleed must be provided. Such an analysis should address the possibility noted by UCS that two-phase flow through the safety relief valves might affect the ability to feed and bleed successfully.[83]

The staff also appears to rely upon feed and bleed in the event of a main steam line break:

> Staff witness Wermiel testified that "in the case of the steam line break, for example, we do have our feed and bleed backup." Tr. 6126.
>
> Staff witness Wermiel agreed that the staff is relying on feed and bleed to cool the core in the event of a main steam line break in the interim until the emergency feedwater system is fully safety-grade. Tr. 6200-01.

[77] EGG-SEMI-6022, "Analysis of Primary Feed and Bleed Cooling in PWR Systems" (September 1982) at 20, 22, attached to BN-82-107, note 6, *supra* (hereinafter referred to as EG&G Report).

[78] *Id.* at 111.

[79] See UCS Response at 1. See generally UCS Response to Board Notification BN-82-93 (October 7, 1982); UCS Reply to our Order of October 15, 1982 (October 29, 1982).

[80] UCS Response to Board Notification BN-82-93 at 7. See EG&G letter at 2-3.

[81] UCS Response to Board Notification BN-82-93 at 7-8.

[82] Licensee's Reply to UCS Response to Board Notification BN-82-93 (October 25, 1982) at 3-5.

[83] See UCS Response to Board Notification BN-82-93 at 8.

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UCS also filed and briefed several exceptions concerning the feed and bleed mode of decay heat removal.[84] Only some of those arguments are of concern to us now; the rest will be discussed in detail in our final decision on design issues.

UCS asserts that feed and bleed "is an untested, unverified cooling mode which depends on operator action and a complex decision process."[85] UCS also maintains that the Licensing Board misplaced the burden of proof by finding that it "has not been shown to be an unacceptable way of cooling the core." LBP-81-59, *supra*, 14 NRC at 1269-70.[86] Finally, UCS argues that the safety relief valves are not qualified to perform the "bleed" function during feed and bleed and that the power-operated relief valve (PORV) would be needed to lower primary system pressure during a steam generator tube break accident.[87]

The licensee and staff maintain that the record is sufficient to demonstrate feed and bleed capability at TMI-1. They also argue that the recent Semiscale tests do not challenge the viability of that process.[88]

The licensee asserts that an event which occurred on February 26, 1980 at the Crystal River facility demonstrated the operability of feed and bleed.[89] See Jones, fol. Tr. 4589, at 3-4; Jensen (UCS Contention 1), fol. Tr. 4913, at 9-10. The record indicates, however, that this event was not a demonstration of feed and bleed over an extended period because emergency feedwater was restored within 20 minutes. Tr. 5011-12 (Jensen).

As part of its effort to investigate feed and bleed, EG&G performed an analysis of the Semiscale test S-SR-2 using the "RELAP5" computer code to determine whether the code could predict the test phenomena.[90] In response to our November 5, 1982 memorandum and order, the staff discusses the discrepancies that were found between the code and the test for the primary coolant inventory.[91] The staff indicated that EG&G will perform the calculations with corrected HPI flow characteristics and expects this change to provide better agreement between the code and test results.[92] The staff also described a feed and bleed analysis using the RELAP5 code for the Midland plant.[93] With only one HPI pump available and the safety relief valves performing the "bleed" function, the analysis predicted that the core would be adequately cooled.[94] This sort of demonstration might also be

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[84] See UCS Brief at 2-3, 9-13, 15, 18-19, 21-24, 41, 44, 103-04, 106-08.

[85] *Id.* at 3.

[86] *Id.* at 9.

[87] *Id.* at 21-24.

[88] See Licensee Response at 26-27, 31; Staff Response at 9.

[89] See Licensee Response at 29-30.

[90] See EG&G report at Section 5.

[91] Affidavit of Brian W. Sheron (Nov. 22, 1982) at ¶¶15-17, attached to Staff Response.

[92] *Id.* at ¶15.

[93] *Id.* at ¶18.

[94] *Id.*

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possible for TMI-1.[95] We would be prepared to conclude that feed and bleed has been adequately demonstrated for TMI-1, if (1) the re-analysis of the S-SR-2 test demonstrates the capability of the RELAP5 computer code to predict the feed and bleed phenomenon, and (2) the code predicts that feed and bleed will successfully provide core cooling using actual TMI-1 plant parameters.

CONCLUSION

A. Information

As we indicated in the foregoing analysis, we believe that the existing record is unclear as to whether adequate core decay heat removal can be assured for TMI-1 in the event of a loss of main feedwater or a small-break loss-of-coolant accident. Therefore, a limited reopening of the record is necessary to clarify this matter. We have determined that supplemental testimony is required in the following areas:

1. The exact size and flow rate of the vents to be installed in the hot legs (from the licensee).
2. When and under what conditions such size vents would or would not be useful to promote liquid natural circulation, including reasons for the conclusions reached (from the staff).
3. The current status of the hot leg vent installation (from the licensee).
4. Whether the modified B&W ECCS evaluation model for small breaks that predicts the boiler-condenser process is an NRC-approved code under Appendix K to 10 CFR Part 50 (from the staff).
5. Whether the staff has reviewed the B&W Appendix K model to determine the ability of the code to calculate the effects of small breaks, including reliance upon boiler-condenser circulation (from the staff).
6. Whether only breaks slightly smaller than 0.07 ft^2 must be analyzed (from the staff).
7. Confirmation (such as by means of detailed computational analysis or experimental testing) that boiler-condenser circulation flow will transport sufficient core decay heat to the steam generators to prevent core damage (from the licensee and the staff).
8. Clarification of the apparent inconsistencies and confusion concerning the safety-grade status of components in the EFW system (from the licensee and the staff).

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[95] The staff indicated that the Midland plant is designed with a core power level that is five percent lower than that for TMI-1. The licensee's computer analyses have indicated that omission of the American Nuclear Society's factor of 1.2 for core decay heat would result in the need for only one HPI pump to provide adequate core cooling. See generally Lic. Ex. 9. Therefore, we are concerned that the five percent difference in power level might affect the success of feed and bleed at TMI-1.

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9. Whether and under what circumstances reliance on feed and bleed is necessary at TMI-1 (from the licensee and the staff).
10. Results of the effort by EG&G to demonstrate the ability of the RELAP5 computer code to predict the results of Semiscale test S-SR-2 (from the staff).
11. Results of a RELAP5-type analysis to determine whether feed and bleed will successfully provide core cooling at TMI-1 (from the staff).

Although we direct the presentation of testimony by only the licensee and the staff on selected issues as indicated above, any party may offer testimony on any of the matters listed. (UCS may file written testimony in accordance with the schedule below if it wishes to present its own witnesses rather than rely upon cross-examination.)

B. Procedure

We intend to proceed promptly to supplement the record and to complete the appellate process in this phase of the case. *All* supplemental written testimony shall be *in our hands and in the hands of other parties no later than the close of business, Wednesday, January 26, 1983.*

The evidentiary hearing will be held in the NRC Public Hearing Room, Fifth Floor, East-West Towers Building, 4350 East-West Highway, Bethesda, Maryland, *at 9:00 a.m. on Tuesday, February 8, 1983.* We expect to complete the hearing within a day or two. Parties will be afforded an opportunity to file briefs, which shall include any proposed findings of fact or conclusions of law that they wish us to make. Briefs shall be *in our hands by no later than the close of business Monday, February 28, 1983.*

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

Atomic Safety and Licensing Boards Issuances

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Cite as 16 NRC 1791 (1982) LBP-82-107A

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James L. Kelley, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Foster

In the Matter of

Docket Nos. 50-413
50-414
(ASLBP No. 81-463-01-OL)

DUKE POWER COMPANY, ***et al.***
(Catawba Nuclear Station,
Units 1 and 2)

December 1, 1982

The Licensing Board grants the petitions to intervene of six individuals and organizations. The Board admits numerous safety and environmental contentions and defers ruling on certain other contentions for which necessary documentation was not yet available. Rulings on proposed security plan contentions are also deferred pending the Board's review of the qualification of the intervenors' experts.

RULES OF PRACTICE: DEFERRAL OF RULINGS ON CONTENTIONS

A Licensing Board has broad discretion to defer rulings on contentions which may later be made more specific on the basis of information not yet available, or to proceed with rulings on such contentions without waiting for more information.

RULES OF PRACTICE: CONTENTIONS BASED ON NEW INFORMATION

Where a contention is advanced on the basis of new information following the original deadline for filing contentions, its proponent has the burden of explaining — in appropriate detail and separate from the contention's text — what is new about the contention and why it could not have been advanced previously.

RULES OF PRACTICE: CONTENTION BARRED BY COLLATERAL ESTOPPEL

A contention concerning a certain accident scenario is barred in an operating license proceeding by the doctrine of collateral estoppel where the same scenario advanced by the same party was found to be not credible in the construction permit proceeding.

RULES OF PRACTICE: GENERIC ISSUES; LITIGATION IN INDIVIDUAL CASES

As a general rule, a generic issue should be addressed in a rulemaking proceeding, if one is pending or about to commence, and not in an individual case. However, since simultaneous consideration of a generic issue in litigation and rulemaking is not necessarily precluded, unless the Commission mandates that result, the basic criterion is safety — whether there is a substantial safety reason for litigating the issue as the rulemaking progresses.

MEMORANDUM AND ORDER

(Reflecting Decisions Made Following Second Prehearing Conference)

On October 7 and 8, 1982, the Licensing Board conducted a second prehearing conference in Charlotte, North Carolina. The primary purposes of the conference were to determine the impact of the Appeal Board's ALAB-687 decision (16 NRC 460 (1982)) on the contentions in this case, and to consider additional contentions proposed by the Intervenors concerning the Staff's recently available draft environmental impact statement. All parties except the State of South Carolina appeared and participated in the conference. This memorandum sets forth the Board's decisions on the matters we addressed.

A. Impact of ALAB-687

In ALAB-687, the Appeal Board accepted referral from this Board and decided three questions concerning our conditional admission of certain contentions in this case. In summary, the Appeal Board rejected the concept of conditionally admitting a vague contention, provided its proponent later supplies the requisite specificity, either following discovery or the availability of new documentary information. The Appeal Board held that —

> a licensing board is not authorized to admit conditionally, for *any* reason, a contention that falls short of meeting the specificity requirements [of Section 2.714(a)]. 15 NRC 467.

As a corollary of our conditional admission rulings, we had also held that we would not apply the five factors in Section 2.714(a)(1) of the Rules of Practice to contentions filed promptly following the public availability of necessary documents, and based on new information in those documents. The Appeal board sustained this ruling, saying that —

> irrespective of when a licensing board is called upon to act, as a matter of law a contention cannot be rejected as untimely if it (1) is wholly dependent upon the content of a particular document; (2) could not therefore be advanced with any degree of specificity (if at all) in advance of the public availability of that document; and (3) is tendered with the requisite degree of promptness once the document comes into existence and is accessible for public examination. 15 NRC 469.

The Appeal Board's opinion was confined to an interpretation of the governing Rules of Practice. It left the application of that interpretation to this Board.

We called for and received comments from the parties on the impact of ALAB-687 on the contentions previously admitted conditionally. All parties agreed on two propositions: (1) that the Appeal Board's decision had no automatic effect on those contentions, but that (2) the Appeal Board's rejection of the conditional admission concept made it necessary for the Licensing Board to vacate those portions of our earlier order conditionally admitting certain contentions. These two propositions are clearly correct. Accordingly, those portions of our March 5, 1982 Memorandum and Order (LBP-82-16, 15 NRC 566) conditionally admitting the following contentions are hereby vacated: Palmetto Contentions 1, 2, 3, 4, 6, 7, 10, 18, 21, 22 and 26; CESG Contentions 8, 9, 13, 16 and 17.

Having vacated our orders of conditional admission, we must determine the appropriate alternative disposition of the affected contentions. In that regard, we specifically asked the parties whether we should reconsider the individual contentions previously admitted conditionally and defer a further ruling if vagueness in a contention might be cured on the basis of a required document not yet available.

The positions of the parties differed markedly on these questions. The Applicants expressed the view that we had previously found these contentions lacking in

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the requisite specificity, and that therefore they should be dismissed from the proceeding without any further consideration. For their part, the Intervenors urged us to reconsider and admit as sufficiently specific the contentions that had been conditionally admitted subject to further specification following discovery; they asked us to defer a ruling on conditionally admitted contentions for which required documents are still not available. The Staff took an intermediate position on these questions, stating that —

> ALAB-687 may be interpreted as permitting the Licensing Board to take a second look at each of the contentions to reconsider whether they exhibit the requisite specificity. Staff Response at 8.

As the Staff recognized, our orders of conditional admission had rested on differing degrees of vagueness in the contentions — *e.g.*, "short of specificity requirements, whatever standard one applies" (Palmetto 5) compared to "marginally acceptable" (Palmetto 6, 7 and 18). Based on their analysis of these differences, the Staff indicated that the contentions previously admitted conditionally pending discovery might be reconsidered, but that the remaining contentions should be rejected now without any reconsideration. Finally, the Staff argued that rulings should not be deferred on the latter category of contentions pending availability of any necessary documents.

We agree in major part with the Staff on these questions. As they point out, we did not make an unequivocal finding of a fatal lack of specificity on many of the contentions admitted conditionally by our March 5 Memorandum and Order. Moreover, when we made those findings we were operating on the assumption that we had the option of conditionally admitting vague contentions, subject to later specification, instead of rejecting them outright. The presence of that assumption in the contention-ruling calculus probably would incline a licensing board more toward findings of vagueness, and we cannot say that it did not have that effect on us. In these circumstances, we have decided to reconsider from the standpoint of specificity all of the contentions listed above for which we have vacated our earlier orders of conditional admission.

With one minor exception, we now find that all of the contentions we admitted conditionally subject to specification to be based on documents not then available do not meet the specificity requirement of Section 2.714. The respects in which these contentions are unacceptably vague are set forth in our March 5 Memorandum and Order and need not be repeated here. These contentions — Palmetto 1, 2, 3, 4, 10, 21, 22 and 26; CESG 9 and 16 — are rejected. The exception is the first sentence of CESG 8, which simply alleges that the plume exposure pathway emergency planning zone for Catawba should include the city of Rock Hill. Although, in general, emergency planning contentions are premature at this point because the plans are not available, we certainly cannot say that this part of CESG 8 lacks specificity. It is admitted. If, as we anticipate, the plume EPZ in the

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finished emergency plans does include Rock Hill, this contention will become academic.

Our reconsideration of contentions previously admitted subject to specification following discovery concerns Palmetto 6, 7 and 18 and CESG 13 and 17. We find on reconsideration that Palmetto 18 and CESG 13 and 17 are fatally vague. Those contentions are rejected.

Much of Palmetto 6, which is concerned with substandard workmanship and poor quality control, lacks sufficient specificity. The last sentence, however, concerns alleged "corner cutting" and does supply a sufficient basis for a contention. We recast the contention that we now accept to read as follows:

> "Because of systematic deficiencies in plant construction and company pressure to approve faulty workmanship, no reasonable assurance exists that the plant can operate without endangering the health and safety of the public."

The thrust of this contention is primarily toward alleged company attitudes and practices; proof of this contention, presumably involving specific instances of misfeasance, need not be adduced at this stage.

We also find that Palmetto 7, while cast largely in general terms and therefore somewhat vague, meets minimal standards of specificity. This "track record" contention questions the Applicants' managerial and technical competence to operate the *Catawba* facility safely, based in part upon past performance at other nuclear facilities.[1] The Applicants oppose this contention, but their opposition goes largely to questions of proof that are not before us at the contention stage. Applicants' Response at 44-45. The Staff has supported admission of this contention, noting that it "is specific and a sufficient supporting factual basis has been provided." Accordingly, Palmetto 7 is admitted.

Concluding our consideration of ALAB-687, we noted earlier the possible option (supported by the Intervenors) of deferring rulings on vague contentions that might be superseded later by specific contentions based on newly available information. Although we have rejected those contentions, we acknowledge that such a deferral approach might have applied here to Palmetto 3, 4 and 26 (concerning emergency planning) and to Palmetto 21 and 22 and CESG 16 (concerning the control room).[2] As we see it, deferral versus ruling now is a discretionary judgment for the Board. If, on the one hand, we had a large number of contentions for potential deferral, it might produce a net saving in Board time to

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[1] This contention is very similar to a "track record" contention recently admitted in the *Shearon Harris* proceeding upon stipulation of all parties. *Carolina Power & Light Company and North Carolina Eastern Municipal Power Agency* (Shearon Harris Nuclear Power Plant, Units 1 and 2), LBP-82-119A, 16 NRC 2069, 2075 (1982). Licensing Board Order of September 22, 1982 (this was inadvertently omitted from the September Issuances).

[2] Although we have vacated our orders of conditional admission of these contentions, our directives to the Applicants to serve copies of the control room procedures and design review (15 NRC 581, 583) remain in effect.

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defer; many such contentions probably would be withdrawn later and never have to be considered. On the other hand, deferred contentions are relegated to a procedural limbo and complicate the posture of a case that is complicated enough without them. Where, as here, we are dealing with only a handful of contentions, it is cleaner procedurally and therefore preferable not to defer — to rule the contention in or out — as we have done. Of course, new information contained in documents not yet available may later provide a basis for more specific contentions.

B. Contentions on the Draft Environmental Statement

Our Order of September 1, 1982 (unpublished), directed the Intervenors to file any revised or new contentions based on new information in the Staff's Draft Environmental Statement (DES) by September 22, 1982. In a joint filing, Palmetto and CESG filed 23 contentions concerning various aspects of the DES. CMEC filed a revised version of its Contention 4.

The new and revised contentions on the DES were not accompanied by a discussion of the five lateness factors in Section 2.714(a) and, under the circumstances, we did not expect such a discussion. Neither, however, were these contentions accompanied by an explanation why they could not have been advanced earlier, or, in the Appeal Board's words, how they are "wholly dependent" on a previously unavailable document. We believe that the proponent of a contention at this or some later stage of the proceeding should have the burden of explaining clearly, in appropriate detail, and separate from the rest of the contention, just what is new about the contention and why it could not have been advanced previously. It should not be the Board's or the other parties' job in the first instance to sort through old documents and pleadings for that purpose. In this case we did not call explicitly for such an explanation in our prehearing conference order. But henceforth all parties are on notice that such a statement is required and that, in its absence and also in the absence of a showing on the five lateness factors, additional contentions will not be considered.

Palmetto/CESG Contentions

In order to avoid confusion with the numbers of contentions previously submitted separately by Palmetto and CESG, we will refer to their jointly submitted contentions on the Draft Environmental Statement as "DES-1, DES-2, etc."

DES-1 and DES-22

These two contentions fault the Reactor Safety Study (WASH-1400) and the reliance placed by the Staff upon it in the DES analysis of accidents more severe

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than design basis. With two exceptions noted below, the contentions cite no specific shortcomings of the methodology nor of the details of the calculations, such as the CRAC Code for describing meteorology. In this respect the contentions lack specificity.

The apparent assumption underlying these contentions is that WASH-1400 should not be used at all in risk analysis for licensing; as DES-22 puts it, such use is "entirely inappropriate." This assumption is incorrect. The discriminating use of WASH-1400 is not contrary to Commission policy. In accepting the report of the Risk Assessment Review Group (NUREG/CR-0400), which concluded that WASH-1400 provides the best available method for determining accident probabilities, the Commission stated that

> With respect to the component parts of the Study, the Commission expects the staff to make use of them as appropriate, that is, where the data base is adequate and analytical techniques permit. Taking due account of the reservations expressed in the Review Group Report and in its presentation to the Commission, the Commission supports the extended use of probabilistic risk assessment in regulatory decisionmaking. NRC Statement on Risk Assessment dated January 18, 1979, p. 4.

Shortcomings in the original WASH-1400 are taken into account in the Staff's DES analysis in various ways, including updated ("rebaselined") results for relevant risks.

DES-1 seeks to place in issue the characteristics of the accidents at Browns Ferry and Fermi, contending that they were "serious." It is beyond the scope of this proceeding to explore in any detail the characteristics of those accidents, at least in the absence of some showing that the Staff's analysis was dependent upon them. We find nothing in the DES to suggest that it was, and the Intervenors point to no such link.

The reactor modeled in the analysis is similar to that under construction at Catawba (DES at 5-36), except that it has an ice condenser containment. One specific shortcoming cited in Contention 22 is that the DES does not include a separate analysis of the ice condenser feature for its possible contribution to accidents. The Staff's position on this point appears at DES E-1, third paragraph, and is not clearly stated. Citing a Staff assessment of Sequoyah, also an ice condenser containment, the Staff acknowledges that that design feature is significant in relation to hydrogen control. The Staff goes on to say, however, that the Catawba applicant "has plans to satisfy the Commission's requirement on hydrogen control." We naturally assume the Applicants "plan" to meet present Commission requirements. The quoted language may be intended as an oblique reference to the pending rulemaking on hydrogen control measures, and the fact that Catawba will be subject to its outcome. *See* Interim Requirements Related to Hydrogen Control, 46 *Fed. Reg.* 62281. In any event, "planned" compliance with rules is not a complete answer in this context, where accidents beyond design basis are being considered.

We do not believe, however, that any detailed accident analysis of the ice condenser feature is necessary in this DES. A more meaningful accident analysis of ice condensers and hydrogen control than could possibly be done here is now being done in the pending rulemaking; for that reason we are declining to litigate hydrogen accident scenarios as a safety issue in this individual case. *See* discussion at 1807-10, below. There is an additional reason not to consider in any detail hydrogen-ice condenser accidents in the DES "severe accident" discussion, namely, that the DES discussion necessarily treats accident mechanisms with a broad brush. It will suffice if the Staff clarifies in the FES its vague and summary reference to the ice condenser feature and provides a brief description of the pending rulemaking. Thus, we view this part of Contention 22 as a valid comment on the DES, but it is not accepted as a contention.

Even though the final emergency plans have not been issued, the Staff includes some pessimistic assumptions in its analyses (DES F-1), including an example where no early evacuation occurs (DES F-3, Fig. F-1). This aspect of the DES conforms to the Commission's requirements for environmental impact statements. *See Public Service Company of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-573 10 NRC 775, 779 (1979)). It is not necessary for purposes of the DES analysis to consider accidents in the context of the details of emergency plans that will be adopted later.

The only portion of these two proposed contentions in which we find a valid contention is the third paragraph of DES-22, concerning the so-called "smoothing technique" in WASH-1400 and whether the Staff has compensated for its deficiencies in the DES. The Staff's response to DES-22 does not include any specific response to this part of the contention. The Applicants ignore this point. Although it could be more specific, the paragraph does raise a criticism about analytical methodology which warrants response. We are admitting the third paragraph of DES-22 as a contention, but we are staying any discovery on that contention until after the FES is available. We expect that the FES will contain discussion of this point which may satisfy the Intervenors.

Except as stated in the preceding paragraph, Contentions 1 and 22 are denied for lack of specificity and bases.

DES-2

This proposed contention refers to an addition of sulfuric acid to the coolant stream in excess of the quantity necessary to react with a stated mass of sodium hypochlorite for the production of free chlorine intended as a biocide. Although the contention acknowledges the absence of a specified concentration of the sulfuric acid to be added, it proceeds to establish a firm rate of release of unreacted sulfuric

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acid. Sulfuric acid has a low vapor pressure and, accordingly, that part removed from the coolant system in the drift settles out in the nearby soil or onto objects. Sulfuric acid is described as a corrodant of many things, including the human respiratory system.

The characteristics of the water in the cooling tower system are, in large measure, like those of the blowdown, which is a liquid effluent subject to the National Pollutant Discharge Elimination System Permit issued by the State of South Carolina. This permit establishes a pH for the effluent in the range 6.0 to 9.0 (DES Table 4.5 at 4-29; DES at I-2). The pH of the drift blown from the tower into the atmosphere should be substantially the same. The State's determination in this regard is binding on the Board. The Board must then factor the environmental effects of the State's determination into its overall NEPA cost/benefit analysis. *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 543 (1977). Under this scheme, it is theoretically possible but unlikely as a practical matter that these effluents could significantly affect the environment and thus the cost/benefit balance.

Apart from these considerations, however, this contention is untimely. The cooling system and its operation were considered at the CP stage (CP FES, Sec. 5.5.2.3, at 5.40 and Sec. 3.6, Table 3.12; OL DES Sec. 4.2.3.4, at 4-3). One of the current intervenors proposed litigation of the sulfuric acid discharge at the CP hearing. *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), LBP-74-5, 7 AEC 82, 93 (1974). Most significantly, the subject is also discussed in OL-ER Sec. 3.6.2. The ER and DES do not differ in material respects in their discussions of this topic.

This contention is denied as untimely. The Intervenors may seek reconsideration upon an appropriate showing under 2.714(a)(1), if they continue to believe that this contention has merit.

DES-3

This contention asserts that the DES is deficient because it does not address the impact that vapor state chlorine discharged from the cooling towers will have on people or on the corrosion of metals. The proffered reason for considering the subject at this time is that the OL-DES differs from the CP-FES in the amount and manner of chlorine addition.

Applying the guidance given in ALAB-687, this contention is not "wholly dependent" upon the content of the OL-DES; it could have been advanced prior to the first prehearing conference. The use of chlorine in the cooling tower was described at the CP stage and the modifications to the original method of application were explained in the Applicants' ER (§3.6.2.3). Although the quantities and kind of reagents now proposed differ from the CP specifications, the concentration of free available chlorine remains the same (DES at 4-3). The description in the

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OL-DES does not depart from the earlier presentation in any significant way. Consequently, we reject this contention as untimely. Should intervenors seek reconsideration they must supply information that will allow us to balance the five factors of 10 CFR §2.714(a)(1).

DES-4

The Applicants and the Staff oppose this and several other contentions on the basis that they are merely stylistic comments on the DES, not litigable safety or environmental issues. This is true of DES-4, which criticizes the use of English and metric units of measurements and different bases in time — *e.g.*, seconds, minutes, etc. The Staff should consider this proposed contention as a comment. The Intervenors agreed that, with that understanding, they would withdraw this contention. Tr. 488-489.

DES-5 and DES-20

As brought out at the conference (Tr. 490-496), the thrust of DES-5 is toward the fact that the McGuire facility has been operating recently around 75% of rated power because of steam generator problems. McGuire is described as a "sister plant" to Catawba, and this is said to "impinge on cost/benefit considerations." The contention's thesis is that the present and presumably temporary derating at McGuire should somehow be made applicable to the Catawba cost/benefit analysis.

In a very similar vein, DES-20 refers again to steam generator problems at McGuire and also at V. C. Summer Unit 1. Again it is alleged that the Staff's cost/benefit analysis is defective for not explicitly taking these problems into account.

The NEPA benefit in electric power to be produced by a nuclear facility is based upon a "capacity factor" which, as we understand the concept, is derived from operating experience at many similar reactors over the years. The capacity factor normally includes not only deratings for repair (like the steam generators at McGuire), but also maintenance checks, refueling, and any other necessary shutdown interval.

The annual average capacity factor used in the Catawba DES is 60%. DES at 6-2. Thus, the Staff's analysis appears to assume that the Catawba units could be shut down 40% of the time — for whatever reason, including steam generator repair — and still produce a net benefit. However, the DES does not spell out the elements that the Staff is including in its capacity factor for Catawba, and particularly whether downtimes for major repairs are included. This information should be included in the FES.

If we are correct about the derivation of the capacity factor in the DES, then it would be arbitrary simply to add to that factor the deratings being experienced at McGuire or V. C. Summer, thereby counting them twice. Moreover, we are inclined to agree with the Staff that, even assuming a long-term derating at McGuire or Summer, it is not reasonable to assume that Catawba will experience a similar derating if and when it is licensed to operate.

The bases for these two proposed contentions are questionable for the reasons just discussed. In addition, however, they are clearly untimely. The derating of McGuire, the principal basis of both contentions, apparently became public knowledge between mid-1981 and mid-1982, before the issuance of the DES. Tr. 492-496. More importantly, the Applicants' ER in §8.1.1 assumed a capacity factor of 76 percent. Since the Staff's 60% capacity factor is far more conservative, the genesis of this topic can hardly be ascribed to the DES. Contentions 5 and 20 are rejected as untimely.

DES-6

This is a need for power contention which is barred by 10 CFR 51.53(c), as explained by the Staff in its comments (p. 20).

DES-7

This contention would inject fixed capital costs (including construction costs) into the NEPA cost/benefit analysis. Such costs are deemed to be "sunk" and are beyond the scope of this operating license proceeding. *See* 15 NRC 584.

DES-8

This is another impermissible need for power contention. Its central point is an alleged uncertainty whether the Catawba units "will be required to meet demand . . ." If not, the contention postulates "adverse and large" cost impacts. But under the Commission's recent need for power rule, we are to assume that Catawba will be needed. The rule requires rejection of this contention.

DES-9

DES-9 contends that, with the post-CP enlargement of the fuel storage pool, the OL-DES should explicitly consider the environmental consequences of both routine operation and accidents related to fuel handling and loss of pool water. In view of the sketchy treatment of these subjects in the DES, we are sympathetic to

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Intervenors' complaints. Nevertheless, we believe that the issue, as presented, must be handled as a comment on the DES rather than as a contention to be litigated at the OL hearing. Intervenors do not contend that there will be lack of compliance with any NRC requirement, nor do they identify the environmental consequences of concern or how the operation of the plant might result in those consequences being significantly greater than stated in the DES. This contention is denied for lack of a specific basis.

DES-10 and DES-19

These contentions relate to the shipment of spent fuel from Oconee and McGuire to Catawba. Following the second prehearing conference, the Applicants served a motion dated November 5, 1982 requesting that we defer ruling on these contentions until there was clarification at least between the Applicants and Staff about the applicability of Table S-4 to the proposed shipments. The Staff has filed a response in support of this motion and the Intervenors have not filed any opposition to it. This motion is granted and, as suggested by the Applicants, all parties are given ten days from the date of this Memorandum and Order to file a further pleading concerning their position on the applicability of Table S-4 values to this case.

DES-11

The first two sentences of this contention about risk analysis (presumably of very severe accidents) allege that people placed at risk by Catawba are also placed at risk by McGuire. The two nuclear facilities are sited approximately equal distances in different directions (about 15 miles) from Charlotte, N.C., a major population center. It is contended that the Catawba risk assessment should take McGuire risks into consideration. (The remainder of the contention commends the Staff on other aspects of the DES risk analysis, and is not relevant for present purposes.)

The DES includes a discussion of the probabilities and consequences of severe accidents at Catawba, as required by the Commission's *Statement of Interim Policy, Nuclear Power Plant Accident Considerations Under NEPA of 1979* (45 *Fed. Reg*. 40101), DES at 5-35 to 5-47. The discussion includes no explicit statement whether it considers risks arising from accidents at McGuire. In response to a Board question, however, the Staff sent a post-conference letter dated October 18, 1982 advising that the DES risk analysis of Catawba does not consider risks from accidents at McGuire. This approach was taken, the Staff tells us, not because of the particular geography of the site, but as a matter of policy. The Staff believes that this comports with the *Statement of Interim Policy* and 10 CFR 51.23(c).

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The Staff may be correct in not taking McGuire risks into account in their Catawba risk analysis. But that conclusion is not so obvious that it requires no explanation. It is to be expected that people living in the vicinity of two (or more) nuclear facilities will feel more "at risk" than if there were only one facility (or none at all). In the case of Charlotte, N.C. and environs, such apprehension may be greater than in most other locations because of the relatively close proximity of both Catawba and McGuire. *See* Tr. 553-554.

These considerations are not directly addressed by the *Statement of Interim Policy* or 10 CFR 51.23(c). Thus the Staff's approach of disregarding the risks associated with McGuire in the Catawba serious accident analysis, while arguably deriving some inferential support from, is not clearly required by that *Statement* or rule. Conversely, one could argue that some recognition of risks posed by other nuclear facilities in the area is required by NEPA, as a full disclosure statute, and by the "possible cumulative impacts" language of 10 CFR 51.23(c). In any event, it is unfortunate that a recurring question of such importance apparently has no clear and present answer. A future answer may emerge from the Commission's *Proposed Policy Statement on Safety Goals For Nuclear Power Plants*, 47 *Fed. Reg*. 7023 (1982).

In the absence of clear guidance, we believe that the FES should, at a minimum, contain some recognition of aggregate risks to the people who live between these two nuclear sites. Properly done, such an evaluation would portray the chances over time[3] that "worst case" people who live between the two plants would suffer some health consequence as a result of a serious accident at either of the sites, taking into account the distances of people from each of the sites and other relevant factors.

Notwithstanding our reluctance to postpone rulings on proposed contentions, we are deferring our ruling on DES-11 until after the FES is available. If the Intervenors are satisfied with the treatment of this question in the FES, they can withdraw their contention. If not, we will consider next procedural steps at that point.

DES-12 and 13

As suggested at the prehearing conference, the Intervenors and the Staff had some later discussions concerning whether certain proposed contentions might be withdrawn as contentions and treated as comments on the DES. By letter dated November 9, 1982, Counsel for the Staff advised that the Intervenors —

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[3] The Staff need not consider simultaneous accident scenarios at both facilities, which the Board does not consider credible.

> have agreed to withdraw their new contentions 12 and 13, dealing with Nitrogen-16 and thermoluminescent detectors. The Staff has agreed to treat these contentions as comments on the Draft Environmental Statement for Catawba, and to provide certain responsive information with respect thereto in the Final Environmental Statement.

On the basis of that understanding, these contentions are withdrawn. The Board appreciates the parties' informal resolution of these matters.

DES-14

Intervenors express doubts about the way dose commitments were calculated for the DES and, accordingly, have concern that the DES dose commitments understate actual exposure. Section 5.9.3.1 referenced in the contention is actually generic in nature[4] and attempts to convey relevant features of the Staff's standard operating procedure for computing dose commitments, as detailed in Regulatory Guide 1.109, Revision 1. This Guide, issued in 1977, was also the basis of dose models used by the Applicants in the ER (*see* ER §5.2.4), as explicitly noted there. Clearly, this contention is not "wholly dependent" upon the DES; it could have been advanced prior to the first prehearing conference. We reject it as untimely.

DES-15

This proposed contention faults the DES for not including in dose assessments the radioactive decay products arising from the disintegration of noble gases which are produced in fission. Specific reference is made to krypton and xenon which, upon inhalation, are alleged to deposit radioactive solids in respiratory passages. The Intervenors have misread the DES. As pointed out by the Applicants, DES Table 5.8, on which the Intervenors rely, summarizes radionuclide activity in the reactor core, not in plant effluents. According to DES Table D.1, the dominant components in the predicted gaseous effluent from Catawba will be Kr-85 and Xe-133, which decay into stable nuclei. We reject this contention because it rests upon a significant mischaracterization of the DES. Apart from that mischaracterization, it lacks any basis.

DES-16

This contention postulates an accident in which a heavy aircraft crashes into the spent fuel pool structure, with serious safety consequences. The DES does at least

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[4] For example, see identically worded §5.9.3.1 in the DES for Midland. NUREG-0537 at 5-19.

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refer to such accidents in passing. DES at 5-33. However, the contention should be rejected on another basis. There is nothing new in the contention that was derived from the DES; the contention is in no sense dependent on the DES, whether "wholly" dependent, or in some lesser degree. As the Applicants point out, aircraft hazards are discussed in some detail in the FSAR. *See* §§2.2.2.5 and 2.2.3.1.3. A contention with exactly the same factual allegations might have been based on the FSAR and proffered long ago. But this contention is clearly untimely now, and it is rejected.

DES-17

DES-17 contends that the DES does not properly evaluate impacts of design basis and severe accidents because it does not isolate and analyze those impacts assuming extreme weather. Applicants and the Staff disagree, focusing their responses on the technique used. We accept this contention so that the propriety of what was actually done can be resolved on the record. There is a question about the timeliness of this contention. As to design basis accidents, it is arguably untimely because at least the same general subject is addressed in FSAR §2.3.4 and ER §7.1. However, the discussion of impacts of severe accidents in the DES is in response to the *Interim Policy Statement* and is new in this case. Therefore the contention clearly is not untimely as to severe accidents and must be admitted as to that aspect. Since similar factors should obtain for meteorology in analysis of both design basis and severe accidents, and since the timeliness of the design basis aspect is debatable, we admit the entire contention.

DES-18

This contention faults the DES for not including in its discussion of "interdiction" an "evaluation of the availability of facilities for relocation and the non-monetary impacts of [re]location." As explained at the hearing, by "facilities for relocation" the Intervenors mean places to which people can permanently relocate. Tr. 605-606. We have already rejected one contention that asserted a need for permanent relocation facilities on the ground, equally applicable here, that such facilities are not required by the rules. When the emergency plans become available, the Intervenors can scrutinize them for adequate "reentry and recovery" plans, 10 CFR 50.47(b)(13), and file a contention on any deficiencies they may find. The other aspect of this contention, concerning non-monetary impacts of relocation, is barred by the Commission's recent *Statement of Policy* on psychological stress. *See* Tr. 605; 47 *Fed. Reg.* 31762 (1982).

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DES-19 and 20

See discussion of DES-10 and -5, above.

DES-21

DES-21 suggests that the Staff has seriously underestimated the health effects from facility operation because of reliance on BEIR-I and III, and because the transfer of radionuclides along food chains may be greater than assumed. This contention is essentially a resubmission of Palmetto's original Contention No. 1, augmented only by mention of BEIR-I and reference to some pages in the DES. Our order of March 5 admitted Palmetto 1 on the condition that it be made more specific following the availability of the DES. Our implementation of ALAB-687 has led us to reject Palmetto 1 for lack of specificity. The complaints in DES-21 are not much more specific than those in its rejected predecessor. Although DES-21 takes a broad initial swipe at Appendix C to the DES concerning uranium fuel cycle impacts, it does not follow up with any specific criticism. Similarly, the references to the "linear hypothesis" and "food chain analysis" are not tied to any discussions or conclusions in the DES. This contention is rejected for lack of a specific basis.

DES-22

See discussion of DES-1, above.

DES-23

This contention alleges that the Staff can no longer rely on Table S-3 for its evaluation of the environmental impacts of the uranium fuel cycle (*see* DES 5-47, -48) because of the decision by the U.S. Court of Appeals for the District of Columbia Circuit invalidating that rule. *Natural Resources Defense Council, Inc* v. *NRC*, 685 F.2d 459 (D.C. Cir. 1982). The mandate in that case has been stayed and the stay will remain in effect at least until the Supreme Court acts on pending petitions for certiorari. In light of these developments, the Commission recently issued a *Statement of Policy* (*Licensing and Regulatory Policy and Procedures for Environmental Protection; Uranium Fuel Cycle Impacts*, 47 *Fed. Reg.* 50593) directing Licensing Boards to —

> proceed in continued reliance on the Final S-3 rule until further order from the Commission, provided that any license authorizations or other decisions issued in reliance on the rule are conditioned on the final outcome of the judicial proceeding.

Accordingly, this contention is rejected.

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CMEC Contentions

CMEC did not file any additional contentions on the Staff's DES. CMEC Contentions 1-3 were originally admitted subject only to the condition that CMEC would review the DES when it became available and make any appropriate revisions in light of that statement. That condition has been met and those contentions are now admitted unconditionally.

The original version of CMEC-4 concerning long-term health effects of radiation was somewhat vague and was admitted subject to the condition that it be made more specific or withdrawn in light of the Staff's DES. A revised and more specific version of CMEC-4 has now been submitted. The Applicants have no objection to its admission. The Staff had some initial reservations about the revised contention but worked out a stipulation with CMEC. Tr. 443-444. Under that stipulation, Revised CMEC-4, as submitted in their pleading dated September 19, 1982, is admitted by the Board subject to the Staff-CMEC stipulation that the second numbered paragraph on page 2 be deleted.

Summary of Admitted Contentions

The following contentions have been admitted to date:

CMEC: 1-4.
Palmetto: 6 (in part), 7, 8, 16 (in part), 27.
CESG: 8 (in part), 18.
Palmetto/CESG Joint DES Contentions: 17, 22 (in part).

C. Serious Accident Contentions

Serious accident contentions were included in the initial Palmetto and CESG contentions. Palmetto 5 questioned the use of the Reactor Safety Study (WASH 1400) in the assessment of probabilistic risk and contended that serious accidents are "plainly credible after Three Mile Island." Palmetto 9 and 31 (CESG 2) concerned the possibility of an explosive hydrogen-oxygen recombination, resulting in failure of the containment.

This Board's Memorandum and Order of March 5 rejected these contentions pointing out that (1) the very generalized concerns expressed in Palmetto 5 were not specifically related to the current licensing actions for Catawba and (2) the hydrogen issues postulated in Palmetto 9 and 31 (CESG 2) are the subject of an ongoing rulemaking process (15 NRC 583, 584). We recognized, however, that hydrogen issues might be litigated in this individual licensing proceeding if, in the Commission's words, "— a credible loss-of-coolant accident scenario entailing hydrogen generation, hydrogen combustion, containment breach or leaking, and

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offsite radiation doses in excess of Part 100 guideline values" were to be advanced. *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674, 675 (1980) (*TMI Restart*). No such scenario was advanced with the subject contentions, but our March 5 Order left the door ajar should the Intervenors come forward with credible hydrogen or other serious accident scenarios. The Intervenors thereafter postulated several accident scenarios in their Responses and Objections to the March 5 Order. We then asked the Applicants and the Staff to comment on whether any of the Intervenors' scenarios might form the basis for an acceptable contention. Both argue, although for different reasons, that the Stud Bolt Failure scenario should be rejected. We agree with the Applicants' position that yet another relitigation of this particular scenario is barred by the doctrines of *res judicata* and *collateral estoppel*. CESG has been unsuccessfully attempting to challenge the safety of Duke Power Co.'s reactor stud bolts since the McGuire construction permit proceeding in 1972-73. The basic scenario — a stud bolt failure, followed by an "unzippering" of the reactor head, followed by the reactor head's penetrating containment as a speeding projectile — has been the same since then. The McGuire Licensing Board heard evidence on this scenario and rejected it. *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2), LBP-73-7, 6 AEC 92, 106-108 (1973). In the construction permit proceeding for Catawba, the Licensing Board again considered the CESG stud bolt scenario, limited, however, "to the extent that new information has become available since the McGuire decision." *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), LBP-75-34, 1 NRC 626, 642-46 (1975). Once again, CESG's contention was rejected on the merits. We see nothing in the present stud bolt scenario to differentiate it from its predecessors, and CESG points to nothing new. Therefore the proffered contention — a matter already litigated between the same parties at the construction permit stage — may not be relitigated now. *Alabama Power Company* (Joseph M. Farley Nuclear Plant, Units 1 and 2), ALAB-182, 7 AEC 210 (1974); *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-3, 15 NRC 61, 78-82 (1982). The fact that Palmetto is also sponsoring this scenario is irrelevant. The two organizations are joint sponsors and their interests for present purposes are indistinguishable.

The remaining three accident scenarios concern hydrogen control and present a somewhat different problem. The Applicants oppose admission of these scenarios as contentions primarily on the ground that they presuppose successive failures of systems that comply with the rules, and that therefore they should be viewed as impermissible attacks on these rules.[5] The Staff takes the position that these scenarios are sufficiently specific and should be admitted for the purpose of litigating their credibility.

The applicable law on this question is not entirely clear. As a general proposition generic issues that are the subject of an ongoing rulemaking need not be litigated in individual cases. We relied on that proposition and the Appeal Board's *Rancho Seco* decision[6] in dismissing the hydrogen control contentions on March 5. On the other hand, the pendency of a generic rulemaking does not necessarily preclude litigation of related issues in individual cases. In the *TMI Restart* case,[7] for example, the Commission allowed certain hydrogen control issues to be litigated when a broad rulemaking proceeding on hydrogen control was in the immediate offing. The Commission can and sometimes does remove any doubt on this score by specifically stating whether boards should continue to litigate generic issues while a rulemaking on them is pending. But since the Commission has provided no explicit guidance here, we must exercise an informed discretion in the circumstances of this case.

The basic criterion is safety — is there a substantial safety reason for litigating the generic issue as the rulemaking progresses? In some cases, such as *TMI Restart*, such litigation probably should be allowed if it appears that the facility in question may be licensed to operate before the rulemaking can be completed. In such a case, litigation may be necessary as a predicate for required safety findings. In other cases, however, it may become apparent that the rulemaking will be completed well before the facility can be licensed to operate. In that kind of case there would normally be no safety justification for litigating the generic issues, and strong resource management reasons not to litigate.

The present case is clearly in the latter category. The pertinent rulemaking directly addresses the intervenors' hydrogen concerns. Among other things, the proposed rule would impose "improved hydrogen control systems for . . . pressurized water reactors with ice condenser-type containments" like Catawba. 46 *Fed. Reg*. 62281. The technical review being conducted in the rulemaking features both depth and breadth, including "review of the deliberate ignition systems installed at Sequoyah and McGuire . . ., a spectrum of degraded core accident scenarios . . .

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[5] There may be some merit in this argument, although it seems to be contradicted by the Commission's allowance of "credible scenario" contentions in the *TMI Restart* case. Similarly, one could argue that the scenarios are an outgrowth of Palmetto 9 and therefore an impermissible attack on 10 CFR 50.44 because Palmetto 9 is taken almost verbatim from §50.44. Conversely, one can argue that the hydrogen scenarios themselves should be read as contentions under Part 100. We do not reach these rather legalistic arguments, preferring to rest our decision on the more practical considerations discussed in the text.

[6] *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 816 (1981).

[7] *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674, 675 (1980).

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and several hydrogen combination phenomena." *Id.* at 62282. It now appears that a final rule will be adopted in the next several months.[8] Given the present status of this proceeding, no operating licenses for Catawba are likely to issue before sometime in 1984, a year or more after the final rule. Thus we see no safety justification for litigating the Intervenors' hydrogen scenarios in this case, and we are rejecting them as proposed contentions.

This does not mean that the Intervenors may not have their hydrogen scenarios considered at all. They were free to submit those scenarios as timely comments in the rulemaking. If they did not choose to do so before the comment period expired, they can be submitted now and still be considered, if that is practical for the rulemaking staff. *Id.*

D. Discovery

Our Memorandum and Order of July 8, 1982 (LBP-82-51, 16 NRC 167) suspended all discovery pending further order of the Board, except with respect to Palmetto Contentions 8, 16 and 27. That suspension order is now lifted and discovery may be resumed on all but one of the admitted contentions, as listed on page 1807, above. Discovery on the admitted part of DES-22 is stayed until the FES is available.

Several discovery motions and related pleadings are pending before the Board. Rulings on these matters will be issued shortly.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James L. Kelley, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 1st day of December, 1982.

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[8] A recent notice in the *Federal Register* provided a timetable for the rulemaking, indicating that a final rule was expected in October 1982. 47 *Fed. Reg.* 48968. The Chairman of this Board telephoned Counsel for the Staff about the present timetable and was advised that a final rule is now anticipated by tha Staff in January or February, 1983.

We regret that we were not able to foresee all of these developments in March, when we suggested that credible accident scenarios might be considered. In any event, it makes no sense to consider them under present circumstances.

Cite as 16 NRC 1811 (1982) LBP-82-108

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Jerry R. Kline
Hugh C. Paxton

In the Matter of **Docket No. 50-266-OLA-2**

WISCONSIN ELECTRIC POWER COMPANY
(Point Beach Nuclear Plant, Unit 1) **December 10, 1982**

The Licensing Board declares intervenor Wisconsin's Environmental Decade to be in default of its hearing obligations and dismisses its petition to intervene. The Board also considers intervenor's contentions and finds each to be irrelevant or without basis.

RULES OF PRACTICE: DEFAULT; PRINCIPLES AFFECTING APPROPRIATE SANCTIONS

When an intervenor failed to appear at a Special Prehearing Conference, the Board applied factors found in the *Statement of Policy on Conduct of Licensing Proceedings*, 46 *Fed. Reg*. 28533 (May 27, 1982), in order to determine what sanction was appropriate.

RULES OF PRACTICE: DEFAULT; ADEQUACY OF EXCUSE FOR NONATTENDANCE AT SPECIAL PREHEARING CONFERENCE

A party wishing to attend an alternate engagement instead of a Special Prehearing Conference must establish the importance of that engagement and that it took

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reasonable steps to avoid the scheduling conflict. When a party's motion to reorganize the schedule of a hearing fails because it has not met the criteria for rescheduling, it may be warned that it risks default for nonattendance at the scheduled conference. Nonattendance may then properly result in a default.

RULES OF PRACTICE: CONTENTIONS; ADMISSIBILITY IN AMENDMENT PROCEEDING

In an amendment proceeding, contentions concerning the safety of parts of the plant not involved in the amendment are not admissible unless the petitioner first establishes that a grant of the amendment would in some way worsen these safety concerns.

RULES OF PRACTICE: CONTENTIONS; ADMISSIBILITY

Petitioner cited a source that stated that hydraulic expansion of a steam generator tube would make it susceptible to stress corrosion cracking. This source was found not to be an adequate basis for a contention because the amendment being sought utilized a hydraulic roll rather than hydraulic expansion. The alleged basis was found to be irrelevant and the contention was not admitted.

SPECIAL PREHEARING CONFERENCE ORDER

On November 19, 1982, the Atomic Safety and Licensing Board conducted a Special Prehearing Conference for the purpose of considering the petition of Wisconsin's Environmental Decade (Decade) to become a party to this proceeding. Because Decade willfully failed to attend the Conference, it is declared in default of its hearing obligations and its petition is dismissed. In addition, Decade's petition also is dismissed because it did not file any relevant contention for which it adequately stated a basis.

I. DEFAULT

The Special Prehearing Conference that Decade failed to attend was the subject of a *Federal Register* notice issued by the Board on October 21, 1982, as part of a four-day hearing considering the merits of a companion case concerning the repair of steam generators at Point Beach Nuclear Plant. This notice followed a telephone conference discussing the parties' convenience. In the companion case, Decade participated in an evidentiary hearing concerning the adequacy of eddy current testing to assure the integrity of steam generator tubes that might be repaired by a "sleeving" process. At the close of the companion case, after two days of hearing, Decade requested the Board to commence the Special Prehearing Conference in this case at 8 pm that same evening so that Peter Anderson, Decade's representative at the hearing, could attend a meeting with the governor-elect of Wisconsin the following morning at 11 am in Madison, Wisconsin. Despite the fact that the motion was made at 6 pm in the evening, following two full days of hearings (including Limited Appearance Statements received at Two Rivers, Wisconsin for an hour and a half the evening before), the Board heard argument on the motion. Excerpt from companion proceeding, following Tr. 43.

In its argument, Decade explained that its office had received a call from the governor-elect of Wisconsin at 4:30 pm that afternoon and that it had no prior indication that a meeting with the governor-elect would be possible. Excerpt at 1882. Decade was then asked what the governor-elect would be doing at the meeting. Excerpt at 1883. Mr. Anderson responded:

> I don't think it is appropriate for me to discuss exactly what we're doing, but the question is the transition that is going on with the Governor's office in Wisconsin, and we have a meeting at 11:00 that we — that is the only option given to us. It is not a meeting set by us, sir.

Excerpt at 1883. After hearing that explanation, the Board stated that it had already denied the continuance but would reconsider at the request of either of the other parties. When neither party indicated that it wished reconsideration of the Board's ruling, the Board repeated its ruling and stated that the Conference would proceed at 9 am the following day whether or not Decade chose to attend. *Id.* Earlier, the Board also had warned Decade that "If Decade is not represented, there is a good chance that they will default in this proceeding." Tr. 1882.

Under the circumstances, Decade's failure to attend the Special Prehearing Conference was willful and appropriate sanctions should be assessed. *Statement of Policy on Conduct of Licensing Proceedings*, 46 *Fed. Reg.* 28533 (May 27, 1982). In selecting a sanction, we should consider:

> the relative importance of the unmet obligation, its potential for harm to other parties or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of a pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances.

Id.

A. Importance of the Unmet Obligation

We consider the Special Prehearing Conference to be an important part of a case, and we had previously discussed with Decade and the parties our expecta-

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tions concerning the information we expected to gain from the Conference. Tr. 33-34. In particular, Decade knew that it would be expected to demonstrate its knowledge of the relationship of its contentions to the application. *Id.* It also was aware that the Board intended to apply criteria for admitting contentions that had previously been used in *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant), LBP 81-24, 14 NRC 175 (1981) at 184. In that case, the Board made broad use of the special prehearing conference to clarify contentions, determine their relevance and determine whether there was any real substance to them. In that case, the Board gave intervenors broad latitude at the Conference out of its concern that contentions be admitted if there is any substantial reason to inquire further into those contentions.

In this case, there were two occasions where we would have turned to intervenors to comment on applicant's statements. Tr. 66-67, 90. The fact that intervenors were not there to help us when we needed help, and the additional fact that the Board was placed in the position of trying to interpret Decade's contentions for itself without any oral assistance from Decade, seriously detracts from an important phase of this proceeding.

B. Potential Harm to Other Parties or the Conduct of the Proceedings

The principal harm to other parties and to the proceeding was threefold. First, if the parties had been required to proceed on the evening of the 18th, pursuant to Decade's motion, neither they nor the board would have been as fresh of mind and body as would have been possible on the next morning. Although mental processes can be made to function with some efficiency after extended hearing hours, there is inevitably some loss of efficiency; that must be weighed against the importance of the need for proceeding immediately. Additionally, we note that the next morning's proceeding took about two hours, even with fresh parties and without Decade's participation. There is, therefore, no assurance that the Conference could have been concluded Thursday evening, even had we tried.

Second, because the Board was unwilling to reschedule its duly noticed conference for a later time, requiring it to return to Milwaukee at public expense, Decade's absence at the Special Prehearing Conference placed a special burden on the Board to explore possible meanings of its contentions. This deprived the Board of its traditional role of neutrality and forced it to play "devil's advocate." Although the Board retained its objectivity and has, in fact, concluded that Decade's contentions were without adequate basis, we believe that Decade enjoyed an unfair advantage at the Prehearing Conference because of the Board's need to assume the role that Decade itself was supposed to play.

Third, if Decade had been at the conference, the parties might have become better informed of its specific concerns and to have presented more specific rebuttal. They were therefore deprived of an opportunity to make the contentions

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more specific and, even, to persuade Decade to drop some of the contentions voluntarily.

C. Isolated Event

Decade's nonappearance at the Special Prehearing Conference was not a part of a pattern of disregard for this Board or the Commission. In general, in both this proceeding and the earlier *Point Beach* proceeding on tube sleeving, we have found Decade to be a cooperative party that has not engaged in objectionable tactics.

However, its nonappearance in this case is not an isolated event. In *Wisconsin Electric Power Company* (Point Beach Nuclear Plant, Units 1 and 2), ALAB-666, 15 NRC 277 (1982) the Appeal Board castigated Decade for scheduling an oral argument and then failing to live up to its responsibility to appear. In that instance, the Appeal Board was extremely lenient, calling off oral argument entirely and depriving the other parties of their opportunity to present oral argument. This is a second instance in which a representative of the Commission was deprived of the opportunity to ask questions of Decade's representative.

D. The Importance of Safety and Environmental Concerns

In the next section of this opinion, we discuss each of Decade's contentions and conclude that they are without basis. We are convinced that none of its contentions raised any important safety or environmental concern. In addition, we note that the Staff of the Nuclear Regulatory Commission is vigorously pursuing its own concerns. Letters of C. W. Fay, Assistant Vice President of Wisconsin Electric Power Company, to H. R. Denton, Director, Office of Nuclear Reactor Regulation (October 27, 1982 and November 22, 1982). We are confident from our review of the Staff's questions that it is endeavoring to fulfill its obligation to protect the public health and safety and that no substantial additional protection would be afforded to the public because of a hearing on Decade's contentions.

E. Other Circumstances

We note, as the Appeal Board has before us, that Decade is a substantial organization, with a staff of 10 individuals (including two co-directors, one of which is a lawyer that appeared in the companion proceeding). It has over 50,000 members. Tr. 100; *see also* ALAB-666 at 279. Nevertheless, Decade refused to answer the Board's question concerning the nature of its conference with the governor-elect and never commented on why it could not be represented by some other individual or why Peter Anderson, Decade's representative, was personally needed by the governor-elect.

We consider the information given us in support of a continuance to have been highly incomplete. We do not assume that every request from a governor-elect takes precedence over a duly noticed public hearing. We also do not assume that a governor-elect that considers it important to consult with Decade about transition matters would not fully understand the need for it to fulfill its hearing obligations. Hence, Decade owed us, at the very least, a statement that the governor-elect had been informed about the scheduling conflict and had been unable to make a different time available.

It is also important that the nonappearance was willful. Decade argued that the schedule should accommodate its needs and the Board rejected its argument. It had full notice that it would risk default if it did not appear.

We have considered the implications of *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400 (1982) for this proceeding. However, we believe that *Byron* establishes a principle that suggests that there be a default in this case. In *Byron*, petitioner's status as a party had already been determined; hence, it had a right to a public hearing. In this case, Decade was still a petitioner and had not established its right to a public hearing. Second, in *Byron* the intervenor's unwillingness to respond to interrogatories made it more difficult for another party to proceed expeditiously, but it did not seriously affect the progress of the proceeding because it did not affect the timeliness of the Board's decision and it did not interfere with the adjudicatory process by affecting the ability of a hearing board to conduct a scheduled hearing. We note that *Byron* imposed a serious sanction — reducing the number of contentions — suggesting that default is an appropriate sanction for the more serious violation present in our case.

In reaching our conclusion, we are mindful of the important right of the public to intervene in Commission proceedings. Given the importance of licensing events and public concern about nuclear power facilities this is an important right granted by duly enacted legislation. Often, it serves important purposes in permitting public concerns to be fully heard and determined and in enhancing the vigilance of the Commission's Staff, which bears the principal burden of protecting the public. However, this right of intervention brings with it responsibilities of participation. In particular, intervention costs taxpayers and ratepayers thousands of dollars of litigation costs. It is necessary that intervenors conduct themselves so that the important rights granted to them will be exercised responsibly, with due regard for the expense that the public bears when intervention occurs.

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F. Conclusion

After considering all the relevant factors, we conclude that the appropriate sanction for Decade's willful refusal to attend the Prehearing Conference is dismissal of its petition for intervention. In the alternative, we consider an appropriate sanction to be the acceptance of the truth of all statements made by applicant or Staff at the Special Prehearing Conference. Application of this sanction also would result in dismissal.

II. THE CONTENTIONS

In addition to our determination that Decade has defaulted, we also have determined that none of its contentions is admissible. Most were irrelevant to this proceeding. A few are not admissible because Decade failed to state a basis for them with sufficient particularity.

Before we discuss the individual contentions, we shall explain the nature of this proceeding and of the steam generator repair that is the subject of the license amendment application that is before us.

A. The License Amendment

On May 27, 1982, Wisconsin Electric Power Company (applicant) notified the Commission of plans to replace the two steam generators in Unit 1 of the Point Beach Nuclear Plant. Despite applicant's contention that the repair "does not require a change in Technical Specifications, does not involve an unreviewed safety question, and does not present significant hazards considerations" the Staff of the Nuclear Regulatory Commission decided that a license amendment was required. Consequently, on July 6, 1982, the Commission published a *Federal Register* notice providing an opportunity for members of the public to petition to intervene in the proceeding. Decade filed its petition on August 10, 1982.

In support of its application, Wisconsin Electric Power Company filed a "Steam Generator Repair Report" (Report), August 1982. The Report is an extensive discussion of safety and environmental issues related to the license amendment.

The Report explains that the Point Beach Nuclear Plant Unit 1 has experienced corrosion in a number of tubes in its two steam generators, which are a part of the primary pressure boundary of this plant. In these generators, pressurized, superheated water produced by the nuclear reactor passes through tubes, thus heating water on the "secondary side" of the steam generator, causing it to turn to steam. This steam is then used to drive electric generators.

The corrosion experienced by these generators has been initiated from the secondary side of the steam generator tubes. Various measures have been taken to

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arrest the corrosion, including changes in the secondary water chemistry, plugging degraded tubes, and reduction of operating temperature. Approximately 14 percent of the tubes in each steam generator have been removed from service by plugging both ends of the tubes, thereby preventing primary water from entering those tubes. As a result of the reduced operating temperature, Unit 1 is currently operating at less than 80 percent of full power. To increase the availability and reliability of these steam generators, and to return to full-power operation, the applicant considers it to be appropriate to replace both steam generators of Unit 1.

Westinghouse Electric Corporation will fabricate new steam generator lower assemblies. The design of the lower assemblies will equal or exceed the design performance of the lower assemblies being replaced. However, the design includes several features that do not alter mechanical performance or the parameters of the Final Safety Analysis Report filed in support of the operating license that was previously granted. The new features are designed to provide improved thermal hydraulic performance, improved access to the tube bundle, and reduced potential for secondary side corrosion.

The fundamental conclusion of the Report is that the steam generator repair program utilizes proven manufacturing and construction techniques and does not result in any adverse impact on plant safety or any significant adverse impact on the environment.

B. The Scope of the Proceeding

The Point Beach nuclear plants are licensed, operating reactors. The right of applicant to operate these plants has been previously decided. The only question open in this amendment proceeding is the question stated in the notice of opportunity for hearing, the proposed replacement of major components of the steam generators. An intervenor is limited to presenting contentions that this proposed replacement would cause impermissible safety or environmental effects. 47 *Fed. Reg*. 30125, July 12, 1982. *See Northern Indiana Public Service Company* (Bailey Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980) at 565. (There also are standing requirements for intervenors, but those have been met in this proceeding and are not contested.)

We have decided to dismiss most of Decade's contentions because they fall clearly outside the scope of the proceeding. Indeed, one of the contentions was labelled "Balance of Plant," indicating that it had to do with concerns that Decade has about the safety of other aspects of the plant, but not about the proposed amendment.

We conclude that all of the contentions other than contentions 3 and 7 must be dismissed because they fall outside the scope of this proceeding. We accept the following statement of applicant as a fair characterization of the appropriate scope of this proceeding:

> Since the subject matter of the proceeding is not the adequacy of the steam generators generally, a contention cannot be admitted unless it alleges that some aspect to the repair of the steam generator that differs from the original steam generators is somehow less safe than the existing steam generators. But beyond that, . . . it also has to provide some colorable basis that, in addition to being less safe, it is somehow unacceptable. . . .

Tr. 49.

1. First Contention

Decade's first contention, filed in its amended pleading of November 5, 1982, is "Tube Failures under LOCA Accident Conditions." (A LOCA is an accident in which the systems designed to cool the reactor core all fail so that excess heat is generated within the core, leading in severe instances to core damage that could cause a breach of the containment structure and lead to serious releases of radioactive substances into the environment.)

The first contention is addressed to an alleged deficiency in the existing steam generators and fails to indicate any way in which a grant of the license amendment would adversely affect the condition of the plant. Hence, the contention is irrelevant to the proceeding. *See also* LBP-81-45, 14 NRC 853 (1981) at 858 (explaining why a previous version of this contention was irrelevant to the related, companion proceeding). Because of our overriding interest in the safety of the community, we naturally were interested in whether this contention had some substance. However, given the irrelevance of the contention to this proceeding, we accept Staff's assurance concerning the safety of the steam generator during a LOCA event. That assurance is based on an analysis of the ability of the steam generator to withstand a main-steamline break, an event causing far greater stresses than a LOCA. This gives the Staff confidence that the generator also would be safe under LOCA conditions. Tr. 61.

We exclude the first contention as irrelevant.

2. Second Contention

Decade's second contention, "Tube Failures Under Normal Operation Conditions" does not, directly or indirectly, refer to the steam generator replacement project that is the subject of this proceeding. This contention is irrelevant. We also are unpersuaded that this is an important safety issue.

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3. *Fourth Contention*

Decade's third contention will be discussed below. It requires greater consideration than the contentions we reject simply for lack of relevance.

Decade's fourth contention, labeled "balance of plant" addresses issues that are not specifically related to the license amendment. Each of the subparts of this contention appears to be a problem that is well-known to the industry and the Commission and that does not, therefore, cause us to be concerned about public safety. However, if Decade disagrees with this assessment, its proper remedy is to petition the Director under 10 CFR §2.206. *See, e.g., Rochester Gas and Electric Corporation* (R. E. Ginna Nuclear Power Plant), DD-82-3, 15 NRC 1348 (1982).

4. *Fifth Contention*

Decade's Fifth Contention, "All Volatile Treatment" (AVT), deals with a water chemistry question that has been present at Point Beach in the authorized steam generators since 1975. Tr. 56. The treatment is required to be used by the technical specifications for the plant. Tr. 62. The only source cited by Decade as a basis for this contention is outdated because it precedes the extensive operating experience that has been gained with AVT, at Point Beach and elsewhere. We have not been given any reason to inquire further about whether another type of water treatment is superior to AVT, about whether AVT causes a serious corrosion problem, or whether the replaced steam generator will be *less* able to perform safely than its licensed predecessor. Indeed, the use of thermally treated Inconel 600 in replacement generators promises to reduce the risk of corrosion and we have no basis for believing that there are any other aspects of the repair that would offset this reduction in risk. *See* Report pp. 2-7 through 2-12, especially 2-8. (We note that the resistance of thermally treated Inconel 600 to corrosion was a subject into which the Board inquired in depth during the companion proceeding on tube sleeving, to which Decade was a party.)

We find this contention to be irrelevant and without basis.

5. *Sixth Contention*

This contention, "Operator Performance," alleges a deterioration in management of the entire Point Beach facility. Assuming that the allegations were correct, they would pertain to the existing steam generator and they do not contain any indication of their relevance to the *replacement* project. Additionally, we have examined the basis of this contention. It relies on a Systematic Assessment of Licensee Performance apparently completed in June 1982. The relevant finding was that "There has been a discernable decline in the higher than average performance that had come to be expected of this utility . . . [and] there was a significant increase in the number of items of noncompliance." We find no basis in the quoted passage for believing that operator performance has fallen to an unsatisfactory level, only that it has declined from previous high standards. Although the assessment may be useful to applicant in improving operator performance, it does not demonstrate a reason to inquire further concerning operator deficiencies.

This contention is irrelevant and without basis.

C. Criteria for Admissibility of Contentions

Relevance is not the only criterion for admissibility of a contention. 10 CFR §2.714 requires that "the bases for each contention [must be] set forth with reasonable specificity." *See Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 & 2), LBP-81-24, 14 NRC 175 (1981) at 181-184. We indicated to Decade that it would be expected to show how its contentions relate to specific sections of the Report, which is well-organized and contains a clear table of contents. *Id.* at 184; Tr. 33-34. We also advised Decade that the following factors, cited in *Perry*, would apply to the admission of contentions:

> (2) Is the contention sufficiently specific so that Applicant has general notice of the issues on which it may bear the burden of proof at a hearing?
>
> (3) Is there either a reasonable explanation or plausible authority for factual assertions?
>
> * * *
>
> (5) If all the facts alleged in the contention were proved, would those facts require imposition of a licensing condition or the denial of an operating license?
>
> (6) Has intervenor indicated enough familiarity with the subject of its contention so that its contribution to the proceeding may be expected to be helpful and so that minor shortcomings should be overlooked?

Id. at 184. This portion of the decision will apply these criteria to the contentions that we have not excluded for irrelevance.

1. Seventh Contention

This contention, "Unspecified Problems with Proposed Steam Generators," is ingenious but insufficient. It is really a contention that is an anti-contention. It does not find any problem with the repair project; it merely finds that past models of steam generators have had unanticipated problems and concludes that those problems create enough of a basis to inquire further about this steam generator repair. We do not accept this as sufficient basis for inquiring further about this particular steam generator, whose adequacy is attested to by the Report, an extensive technical document that Decade has been able to examine.

Additionally, this contention is so vague that it gives applicant no notice of what is being alleged. Thus, it is entirely lacking in the required specificity. Furthermore, even if Decade proved its allegation that Westinghouse Model D and Model 51 steam generators experienced unanticipated forms of degradation, proof of those facts would not entitle it to any relief because it would not have demonstrated what license conditions should be imposed on this steam generator or that this steam generator was unsatisfactory and ought not to be licensed.

Consequently, we reject this contention. It fails to meet criteria (2), (3) and (5) and Decade has failed to demonstrate enough knowledge of this steam generator for us to consider criterion (6) to be sufficiently important to offset the other criteria. In particular, the contention is too vague to put applicant on notice of what it would be required to prove, pursuant to its obligation to carry the burden of proof. There is a missing logical link between its alleged basis and the inference of the inadequacy of this steam generator repair. And, even if it were considered to have an adequate basis, proof of the alleged facts would not lead to relief.

2. *Contention 3(a)*

Contention 3 deals generally with an assertion that the elimination of the tube sheet crevice in the replaced steam generator will introduce safety problems. Decade correctly states that the tube sheet crevice will be eliminated. The tubes will be hydraulically expanded to the full depth of the tubesheet holes (and apparently after gas leak testing is completed), eliminating the tube sheet crevice. Report at 2-8; *see also id.* at 2-12 (hydrotesting apparently will occur after the hydraulic expansion is completed). Consequently, contention 3 is generally relevant, and we will discuss each subpart of that contention. *See* Tr. 67.

Contention 3(a) alleges that "the newly situated roll stressed transition zone will be subject to stress-assisted cracking due to residual stresses from the hydraulic expansion process." As a basis for this contention, Decade cited an excerpt from Ad Hoc Committee on Steam Generators, *Final Report to the Edison Electric Institute Nuclear Plant Design and Operations Task Force on Pressurized Water Reactor Steam Generators,* August 1, 1974, at Part VII, p. 2 ¶5 and p. 12 ¶32f. That excerpt concluded that "testing of rolled out specimens should be done under realistic environmental conditions."

At the Special Prehearing Conference, applicant claimed that the steam generator replacement will use a hydraulic roll rather than a mechanically expanded roll. Tr. 73; Report at 2-8. Furthermore, applicant objected that there has been a great

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deal learned since the 1974 Ad Hoc Committee Report, which was commenting on a rolling process that is not part of this application and that thermally treated Inconel 600, used in this application, had not been developed at that time. Tr. 76, 80, 84. Applicant also objects that there is no basis for believing that the residual stresses left by the hydraulic rolling process create a safety problem. Tr. 80. The Staff agrees with applicant that the Ad Hoc Committee Report is irrelevant because it refers to mechanical rolling, rather than to a hydraulic roll. Tr. 85.

We conclude that there is no basis for this subcontention. (Criterion 3.) Therefore, it shall not be admitted to this proceeding.

We do wish to reiterate a concern we expressed at the hearing, however. We commented that the hydraulic expansion of the tube into the tubesheet eliminates the crevice and is the principal change being made in the repaired steam generator. Yet the application does not contain the results of tests that support the safety of this change, which has some effect on the location of residual stresses in the tubes. Tr. 82, 79-80. We do not consider it to be an adequate explanation that "the NRC knows about these tests" or that the tests are proprietary. Tr. 82-83.

It is our belief that the Commission has two purposes in conducting safety reviews. First, it must assure the safety of the public and the environment. Second, it must compile a public record that is complete and gives confidence in the correctness of its conclusions. At this point, the record does not meet this second criterion, which we believe the Commission intends to fulfill. However, we find the on-the-record statements of counsel for applicant that extensive laboratory tests have been conducted to be reassuring. Consequently, we do not consider this deficiency in the record to require us to admit this contention (that does not directly raise this question) nor do we consider this to be a sufficiently important safety issue for us to decide that default is not an appropriate consequence for Decade's failure to appear at the Special Prehearing Conference. However, we trust that a satisfactory public record on this point will be compiled before the staff would decide to approve the license amendment.

3. Contention 3(b)

Contention 3(b) deals with the risk of corrosion in a zone above the tubesheet, impliedly risking an unrestrained tube break. However, the only basis for this contention is a source from 1972 stating that "zero solids treatment" (or all-volatile water chemistry) is not recommended in steam generators.

Applicant argues that Diagram C, presented by Decade, does not indicate its source and does not in fact represent the location of the transition zone in the replacement steam generator. Counsel for applicant assures us that the transition zone was carefully placed, after study, and that the most highly stressed portion of the transition zone is within the tubesheet. Tr. 78. However, these facts are not in the application or Report. Tr. 77, 91, 95.

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By contrast, the Report does contain considerable discussion of methods that have been devised to reduce corrosion (Tr. 86-90) and Decade provides us with no basis for believing that, on balance, the redesigned generator is more dangerous than its predecessor. A 1972 reference to "zero solids treatment" plus a statement that the roll-transition region is in a "more ominous location" does not provide adequate basis for this contention. Consequently, we will not admit this sub-contention, primarily for failure to meet criterion 3. (But the Staff might consider obtaining diagrams and test data to document the location of the transition zone and of residual stresses.)

4. Contention 3(c)

This contention states that "it will be more difficult for eddy current testing to detect stress-assisted defects or corrosion in the transition zone than in the unexpanded portion of the [tube]." However, the basis provided, which is a citation from testimony included in the record in our companion proceeding, implies that circumferential cracks — that are particularly hard to detect — are most likely to occur in the roll-transition area of a tube. Consequently, we think it fair to interpret the contention to include this portion of the evidentiary statement.

However, the authority stated concludes that "circumferential cracks at expansion transitions have not generally been of concern since . . . such cracks typically involve only a small fraction of the tube circumference before resulting in a detectable leak." Furthermore, counsel for applicant clarified the record by stating that the principal roll-transition stresses are within the tubesheet, where the consequence of a rupture is limited. Tr. 78. Applicant also argues that the contention does not address other lines of safety available in the steam generator, including the leak-before-break criterion and the likelihood that cracks even in transition zones may not be circumferential. Tr. 95. Consequently, we conclude that there is not adequate basis for us to find that a safety deficiency exists concerning the detectability of circumferential cracks (criterion (3) is not met), and this contention shall not be admitted.

5. Contention 3(d)

Contention 3(d) is not accompanied by any separate statement of basis. It asserts that there will be unconstrained leakage in the transition zone of the tubes. To some extent, we have already discussed this contention under the similar contention, 3(b). We see no reason to reach a different conclusion on this contention than we did on 3(b). No basis has been stated. Criterion (3) is not met. The contention is not admissible.

6. Conclusion

After reviewing each contention and subcontention individually, we conclude that none is admissible and that none raises a serious safety question such that default is an improper sanction for Decade's nonappearance at the Special Prehearing Conference. Consequently, Decade shall not be admitted as a party.

III. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 10th day of December, 1982,

ORDERED

The August 10, 1982, Petition for Leave to Intervene and Petition for Hearing filed by Wisconsin's Environmental Decade, and subsequently amended, is dismissed.

This is a final order that is subject to appeal, within ten days after service of this order, pursuant to 10 CFR §2.714a.

THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Hugh C. Paxton
ADMINISTRATIVE JUDGE

Bethesda, Maryland.

Cite as 16 NRC 1826 (1982) LBP-82-109

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James P. Gleason, Chairman
Glenn O. Bright
Dr. Jerry R. Kline

In the Matter of **Docket No. STN 50-483-OL**

UNION ELECTRIC COMPANY
(Callaway Plant, Unit 1) **December 13, 1982**

In a Partial Initial Decision, the Licensing Board rules that isolated construction deficiencies do not show a pattern of a programmatic breakdown in Applicant's quality assurance program. The Board determines that pending a resolution of emergency planning contentions and the making of requisite findings by the Director of Nuclear Regulation, the Director would be authorized to issue an operating license for the Callaway Plant, Unit 1.

QUALITY ASSURANCE: CONDITIONS ADVERSE TO QUALITY

A lack of knowledge that quality deficiencies have been recorded by Applicant's construction contractor represents a failure in meeting quality assurance criteria under Commission's regulations in 10 CFR Part 50 Appendix B.

QUALITY ASSURANCE: RECORDS

Documented reinspection results where the objective is to discover the extent of a problem that could affect quality is a requirement of the Commission's quality assurance criteria.

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QUALITY ASSURANCE: ACCEPTANCE CRITERIA

Where quality control inspectors provide reports three months after the reported event occurred, under circumstances where the information contained in such reports is similar and only a single inspector noted comments thereon, such documents are considered worthless.

QUALITY ASSURANCE: PROGRAM ADEQUACY

A proof of the adequacy of quality assurance activities can be ascertained by comparing actual performance against functional standards established in the Applicant's program.

TECHNICAL ISSUES DISCUSSED

- Construction Deficiencies
  - Materials Integrity and Safety
  - Concrete Density
  - Welding Defects
  - Substandard Piping
  - Radiographic Technique
  - Code Enforcement

APPEARANCES

Thomas A. Baxter, Esq., Richard Galen, Esq., Joseph E. Birk, Esq., for the Applicant

Roy P. Lessy, Jr. Esq., Robert Perlis, Esq., for the United States Nuclear Regulatory Commission

Kenneth M. Chackes, Esq., Kay Drey, for the Joint Intervenors (Coalition for the Environment, St. Louis Region, Missourians for Safe Energy and the Crawdad Alliance)

A. Scott Cauger, Esq., for the Missouri Public Service Commission

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PARTIAL INITIAL DECISION
(Operating License)

I. INTRODUCTION

This is a partial initial decision on an application of the Union Electric Company of St. Louis, Missouri for an operating license at its Callaway facility. The Applicant is one of five utilities that jointly submitted construction permit applications under a Standardized Nuclear Unit Power Systems (SNUPPS) option which provides for, within the Commission's standardization policy, a simultaneous review of the safety-related parameters of a limited number of duplicate plants.[1]

The Applicant's construction permit was granted by the Commission on April 16, 1976 and notice of an opportunity for a hearing on the operating license application was published in the *Federal Register* on August 26, 1980.[2] Intervention as parties was granted to the Joint Intervenors (Coalition for the Environment, Missourians for Safe Energy and the Crawdad Alliance) and John G. Reed, an individual. Representatives of local governments and the Missouri Public Service Commission were also admitted to the proceeding. Nineteen contentions on quality assurance, environmental protection and emergency planning issues were admitted by the Board. However, specification of emergency planning contentions was deferred pending development of offsite response plans and the contention on environmental issues has been withdrawn by its sponsor. This decision then is concerned only with the quality assurance controversy.

Of ten contentions alleging failures in the Applicant's and contractor's quality assurance programs, three were eliminated from the proceeding by motions for summary disposition granted by the Board. An evidentiary hearing was held during November and December of 1981 and time was provided for limited appearance statements. The Joint Intervenors (Intervenor), sponsor of this contention, provided no direct testimony, relying on extensive cross-examination for proof of its allegations. The Applicant and Staff provided individual or panel witnesses on all contentions and a complete list of witnesses is included in Appendix I.

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[1] *See* 10 CFR Part 50, Appendix N.

[2] Clarification of this notice was published in the *Federal Register* on November 21, 1980 after Applicant indicated it intended to proceed only with Unit 1.

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II. OPINION

The Joint Intervenors in this proceeding allege a failure in the Applicant's quality assurance program in that various inspection and surveillance functions were inadequately performed. And as this negligence, Intervenor contends, constitutes a breakdown in meeting or satisfying the criteria of 10 CFR Part 50 Appendix B, the quality of safety-related materials cannot be assured, thus jeopardizing the safe operation of the plant. Accordingly, the Joint Intervenors conclude, the facility should not be licensed to operate. The inadequacies were attributed to the Applicant, the Bechtel Power Corporation, the Daniel International Corporation, and various inspectors among others. In support of their claim of deficient performances, Joint Intervenors submitted six contentions which were at issue in the hearing. We treat the contentions here *seriatim*.[3]

A. I.A. Embedded Plates

The embedded plate contention consumed a major part of the hearing sessions on Intervenor's quality assurance issue. The deficiencies cited are that defective embeds were fabricated and installed in the plant contrary to the requirements of the quality assurance criteria established in 10 CFR Part 50, Appendix B. In support of its claim, Intervenor states that inspection, surveillance and testing activities were improperly performed and that exceptions to welding code requirements were also improperly permitted.

The essential assertion of the Intervenor is that embedded plates with possible defective welds were installed in the facility and, in the event of an emergency, weld and plate failure could result in the collapse of critical structural members and piping systems necessary for a safe shutdown of the plant.

Embedded steel plates with welded studs or anchors to transmit forces between steel and concrete have been utilized in construction projects like Callaway for many years. *See* Tr. pp. 947-957. At Callaway, the Bechtel Corporation, the Applicant's principal architect/engineer, provided for the use of two different plates in its construction specifications for the facility. The plates' function is to support various members such as steel floor beams, HVAC components and piping and are installed as fixtures in concrete walls through the use of welded steel studs and welded steel anchor rods embedded in the concrete. Studs are welded to embed plates by an automatic machine operation while anchor rods are attached through a manual weld process. (Board Findings 1, 2, and 3)

The Applicant is one of several utilities that participated, under NRC regulations, in an organized Standardized Nuclear Unit Power Plant System (SNUPPS) for the construction and operation of a nuclear power plant. Under the SNUPPS concept and the regulations in 10 CFR Part 50, Appendix B, the SNUPPS organization, the Applicant, Bechtel Corporation and its plate supplier, the Cives Steel Company, and the Applicant's construction contractor, the Daniel International Corporation, have quality assurance programs and responsibilties. *See* Schnell Testimony, ff. p. 216 at 4-34. In exercising these responsibilities, the Bechtel Corporation is required to provide a quality surveillance during fabrication of embedded plates, the Cives Company is charged with inspecting all plates to contract and code requirements and the Daniel Corporation had the responsibility of a receipt inspection, generally limited to verifying the quantities of plates received on site and damages occurring during shipping. On July 8, 1977, subsequent to the commencement of the investigations referred to herein, the Daniel Corporation was also directed to perform a quality control receipt inspection of all Bechtel procured safety-related items. (Board Finding 4)

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[3] The complete text of the contentions is included in Appendix II.

As a result of an NRC routine inspection on June 9, 1977, stop work orders were issued by the Daniel Corporation on installing embedded plates after machine welded plates with apparent defects were discovered. The plates, which did not have full 360 degree flash material, had not been tested as required by the American Welding Society (AWS) code. (Board Finding 5) The orders stopped work, pending a complete reinspection, of all uninstalled plates, manual as well as machine welded. Up to that point, facility construction was less than 10 percent complete and 255 machine welded plates and 225 manual welded plates had been installed in support of safety-related loads. (Board Findings 6 and 7) Starr, Tr. 1397. The Intervenor argues that failures on the parts of Bechtel Corporation and Daniel Corporation employees to discover welding defects and to perform quality control inspections on machine welded plates were infractions of 10 CFR Part 50, Appendix B criteria. *See* Intervenor Proposed Findings, pp. 3-5. Although the Intervenor refers correctly to Licensee's failure in meeting Criterion X as being cited by an NRC inspector (Intervenor's Ex. 28, p. 7) this deficiency was overcome by the NRC's later agreement that plates installed before June 9, 1977 met requirements. (Staff Ex. 6) The Intervenor misconstrues the separate and different inspection responsibilities of the Daniel and Bechtel Corporations. *See* Schnell Testimony, *infra* and Applicant Embed Testimony, ff. 510 at 13-14. In connection with Intervenor's claim that missing documentation regarding the manufacture of embeds was also in violation of quality assurance criteria, this documentation was supplied and the matter closed satisfactorily to NRC inspectors. (Staff Ex. 4, p. 6)

Prior to welding deficiencies alleged to exist in June 1977, the SNUPPS organization quality assurance manager brought to the attention of the Applicant certain deficiencies in Cives manufactured materials that were being reflected in Bechtel inspection documents. The Intervenor alleges that this evidences early warnings of manufacturing defects which did not result, as they presumably should

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have, in corrective changes in procedures by the Bechtel and Daniel Corporations. This could have, the Intervenor believes, resulted in stopping the installation of defective embedded plates by at least six months. On receiving the above information from SNUPPS, the Daniel Corporation was directed to inspect 10 percent of the embed plates on site, which produced a finding that only four pieces out of 374 pieces inspected had deficient welds. However, the defects were considered minor in nature and the conclusion was reached that the material was being manufactured according to the quality required. Tr. pp. 1234-36; Joint Intervenors Ex. 18. One of the pieces found deficient, a door frame, was later found to be acceptable and was installed, an explanation found satisfactory to NRC inspectors. *See* Intervenor Proposed Finding 14 and Intervenor Ex. 34, p. 10. (Board Finding 7)

After the stop work orders were issued in June 1977, the Cives Company and the Daniel Corporation were independently directed to reinspect all plates on site that had not been installed, and the Daniel Corporation also was given a continuing added responsibility to provide complete quality receipt inspection of all safety-related material supplied by the Cives fabricator. (Board Finding 8) Inasmuch as the evaluation efforts involving machine welded and manual welded plates used different methods of analysis and review, the results are discussed separately in the Board's opinion and findings. We do this for purposes of clarity, for the record reflects an ambiguity on occasion when cross-examination fails to distinguish between the two kinds of embeds and Intervenor's proposed findings do not, as required by our regulation (10 CFR 2.754(c)), always cite to the record or make clear that some of the exhibits referred to were admitted solely for purposes of impeachment, *e.g.*, Tr. 592-594. In discussing first the machine welded plates and then the manual welded plates, we also follow here the order in which evidence on those issues was presented during the hearing.

Machine Welded Plates

Welded studs on machine welded embeds were required to be inspected to conform to the requirements of the American Welding Society (AWS) *Structural Welding Code* D1.1-75. (Applicant Embed Testimony at 13) The Cives Company had been inspecting the studs correctly pursuant to a section of the Code that required bend testing only on one out of every hundred studs. Bend testing was performed by striking the stud to a fifteen degree angle in a direction opposite to a missing weld fillet. Subsequent to the stop work orders, Cives was required to conform its inspection to a more rigorous requirement where every stud not having a 360 degree weld fillet would have to be bend tested. (Board Finding 10)

The reinspection efforts of the Cives Company and Daniel Corporation, which called for a visual inspection of all studs and bend testing where 360 degree fillet welds were missing resulted in failure rates of 0.08 percent and 0.11 percent,

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respectively. This rate compared favorably with industry standards. (Board Findings 9 and 12) The bend test produces much higher stresses on studs and stud welds than the design loads applied to the embedded plates. (Board Finding 11)

In its proposed findings, the Intervenor suggests that NRC quality assurance criteria require, as a protection against bias, that individuals other than those from companies interested in the outcome should be used to do inspections. They also maintain that a single inspector could not have performed all of the stud inspections recorded on several of the days reported. *See* Intervenor Proposed Finding 24 n.8 and Proposed Finding 25. It seems clear that Criterion X prohibits the use of the same personnel for quality inspections where those employees performed the welding tasks in question. This is not the case here. And further, there is no convincing evidence or testimony that only a single inspector was used on the dates indicated by Intervenor. The studs that failed the bend test procedure — 66 out of 81,673 studs inspected — were replaced with acceptable studs. (Applicant Embed Testimony at 20) The low rate of failure during the reinspection was an assurance to the Bechtel Corporation, which designed and contracted for the plates, that the embeds installed prior to June 9, 1977 met the requirements of the welding code. This confidence was based on the fact that the reinspected plates were fabricated by the same Company in the same time framework using the same procedures as the plates installed before June 9, 1977. (Board Finding 13)

A second step in the review of previously installed machine welded embeds was the performance by Bechtel of an engineering analysis, using data from the reinspection effort, to develop the probability of plate failure. This probability, found to be on the order of one in one billion, was analyzed as being the product of the probability of having a defective stud, the probability of the plate with an assumed defective stud supporting a safety-related load, the probability of that load exceeding the plate capacity due to an assumed adjacent ineffective stud, and the probability of the design load actually occurring. (Board Finding 14)

Although Applicant's expert witnesses testified that the analysis represented a very conservative approach and provided additional assurances of the structural integrity of embeds installed prior to June 9, 1977 (*see* Applicant Embed Testimony at 26), the Intervenor challenges the results on several grounds: first, it cites the fact that the NRC did not rely on the analysis; second, no attempt was made to ascertain how many of the installed embeds may have been fabricated in the same time period as those where the greatest number of defects were found during the reinspection program and finally, the analysis did not consider the possibility of multiple stud failures. The evidence does indicate an apparent lack of confidence in the probability analysis by the NRC investigators (*See* Staff Ex. 6, Schnell letter, April 24, 1980, p. 2), but Staff testimony that the analysis was unnecessary to prove the structural integrity of the installed plates went unchallenged. *See* Tr. Gallagher, pp. 1327-28. The record reflects that plates which were generally interchangeable, when assembled at the site, were mixed so that their use

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did not necessarily follow a pattern of first in-first installed. (Board Findings 15-16) Accordingly, no consideration could have been given to the period in which such plates were fabricated. On the multiple stud issue, the evidence reveals that adjacent stud failures — the only significant alignment that could affect the statistical analysis — would result in a plate failure rate only slightly more than single stud rate failures. The Intervenor's attempt to demonstrate a fallacy in the analysis by using a possible defect in all studs on all plates fails with assumption that other parts of the analysis remain equal, an assumption that is not possible in fact since the other parts are dependent on each other.

As a final step in reviewing the integrity of installed machine welded embeds, the Applicant, at the request of the NRC, had live load tests made on six plates installed prior to June 9, 1977. The plates were randomly selected on the basis of accessibility and the feasibility of mounting a test rig for the plates and their selection was concurred in by NRC officials. The tests, under the supervision of the Applicant's expert witnesses, Drs. Slutter and Fisher from Lehigh University, utilized a thirty-ton hydraulic jack which subjected the plates to loads slightly in excess of their design loads without any evidence of plate or stud failure, cracking or yielding. The tests were also witnessed by NRC personnel. (Board Findings 17-20) The Intervenor alleges a possible bias tainting the tests on the basis of a prior relationship between Applicant's experts and a company that manufactured machine welded studs and also claims that similar tests on embedded plates performed for the Applicant several years prior to the instant one, were possibly a "dry run." We believe these claims to be without merit since the relationship of former consultants to a stud manufacturer on a question of the welding integrity of studs which pass through an intermediate fabricator does not present any possible conflict of interest and we fail to see any problem even if the Applicant had in fact performed — which we do not subscribe to as happening — the prior tests as an additional precaution against failure of the installed plates.

Despite contrary allegations in Intervenor's contention, the testimony indicates that the location and loads of all machine welded embeds installed before June 9, 1977 are known. Of significant importance to the issues in this controversy is the conservative design of embed plates and studs with maximum load capacities producing a minimum safety factor of at least 2.0 against the applicable limit state of the plates or studs. And since the actual loads applied to an embedded plate are considerably less than the allowable load, the factor of safety for a majority of plates is higher than 2.0. Further discussion of this matter and its importance will be found subsequently in this opinion. As a final comment here on machine welded embeds, the Applicant testified, in response to one of the allegations in Intervenor's contention, that the possibility of a plate failing to support "critical piping" systems was remote since such systems were designed to have a safety factor of 1.64 against their yielding state and a much greater factor against exceeding their limit state. In addition, the systems required to maintain a safe

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shutdown following a design basis accident are composed of two independent subsystems, both of which could not be affected by the failure of a plate in one system. (Board Finding 21)

Manually Welded Plates

As in the case of studs on machine welded plates, all welding of anchor rods to manually welded plates was required to be in conformity with the American Welding Society (AWS) D1.1-75 Code. (Board Finding 22) After June 9, 1977, the Daniel Corporation undertook a quality inspection of safety-related materials supplied by the Cives Company and found some deficiencies in manual welds; the Cives organization was then directed to inspect all manually welded plates not yet installed and to identify the nature, degree and number of all welding nonconformances. (Board Finding 22)

There is adequate testimony in the record that the precise location and loads on all manually welded embeds installed prior to June 9, 1977 are known. *See* Intervenor Ex. 78. Manual welded embeds are used in the Callaway facility to support structural steel framing members (Board Finding 26), and the anchor rods that are attached to them are welded, due to their large size, by manual instead of machine welding processes. (Board Finding 24) The Applicant's prepared testimony, which was not contradicted, indicated that deficiencies in meeting the welding requirements of AWS D1.1 were due to the physical difficulty of a welder maintaining proper access and rod orientation in welding among multiple anchor rods. It was Bechtel's conclusion that the Code requirements were not developed for the type welds involved in the Callaway construction, and as will be discussed later, exceptions to relevant sections of the Code were recommended and approved. (Board Finding 25) Manually welded plates, like machine welded plates, had included in their design load capacity a minimum safety factor of 2.0 against the yield limit state of the plates and tensile capacity of the anchor rods. (Board Finding 27)

The Bechtel Corporation was advised by Cives during its reinspection that welding deficiencies were found in manual plates which were not in conformity to Code welding requirements. The deficiencies discovered were insufficient weld size, unequal leg size, unacceptable weld profiles (excessive convexity) and excessive undercut. (Board Finding 28) Based on this information, Bechtel performed an engineering evaluation on what was considered to be a "worst case" basis: namely, it developed new load carrying capacities by assuming that all anchor rods had ⅛ inch undersized welds for the total perimeter (360 degrees) of the rod, both legs of the weld were undersized and that all rods had a 1/16 inch undercut. (Board Findings 29-30) With these assumptions, Bechtel calculated a reduced load carrying capacity for each plate which, when compared to the actual applied loads, demonstrated that, in all but four cases, where it was equal, the load

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carrying capacity exceeded the actual loads. In its embed testimony, the Applicant stated the load carrying capacity exceeded the design loads in all cases. The Intervenor placed in evidence, however, a letter from Bechtel to the Applicant dated April 9, 1980 which indicated that in four instances, the actual loads equalled the load capacity. (Board Finding 31)

Intervenor in proposed findings has framed a substantial number of its criticisms challenging the validity of Bechtel's engineering evaluation. Summarized, these objections amount to the following: first, Bechtel performed its calculations with limited information from the Cives reinspection effort since Cives had completed only its first of four days of reinspection at the time that Bechtel performed its calculations on reduced load capacities; second, the data reported by Cives on undersize and undercut did not reflect Bechtel's assumptions that the maximum undersize was ⅛ inch and undercut was 1/16 inch; third, the reduced load capacities did not produce an adequate safety margin since at least four plates had a reduced capacity equal to the plate loads and fourteen other plates had actual loads within 96 to 98 percent of the reduced design capacity; fourth, if the installed plates had larger deficiencies than the ⅛ inch undersize, which Bechtel reported to be the critical weld parameter, then plate failure of manually welded embeds could be expected; and last, there was substantial evidence of a significant number of manually welded plates reinspected after June 9, 1977 with an average weld undersize greater than ⅛ inch. *See* Joint Intervenors Proposed Findings, p. 20-27.

Considering Intervenor's arguments in order, the hearing record makes clear that Bechtel did not rely on written reports from Cives' reinspection efforts to document their assumptions on undersize. Instead, Bechtel's engineering evaluation was based on information communicated orally. Tr. 724 (Meyers). The Applicant implicitly concedes Intervenor's position when it proposes as it did in its reply findings that it sees nothing wrong beginning calculations using unconfirmed assumptions subject to subsequent confirmation when final Cives data were available. There is a weakness in this response however since it ignores the fact that Bechtel's final August 10, 1977 report on its investigation of welded embeds — which included the results of its engineering evaluation — actually preceded the termination of Cives reinspection program. (Board Finding 33) It appears that Bechtel may have decided that weld deficiencies were not significant after Cives completed its first day of the reinspection effort since there is evidence that its engineering department did not consider the conditions detrimental to the integrity of the embeds by June 30, 1977. Joint Intervenors Ex. 20, p. 4.

On Intervenor's second issue above, it is argued that Cives data reports reflected limited amounts of information concerning the amount of undersize and no information of the amount of undercut or the amount of undercut that extended around the anchor rod's circumference. Applicant's response is that Cives had been directed to identify only the nature and maximum extent and not the number of such deficiencies. It indicates that it merely sought to obtain the amount of undersize on the one or more anchor rods with the worst undersize condition. *See* Applicant Reply to Proposed Findings, p. 15; also Tr. 796 (Meyers). For its engineering evaluation, Bechtel sought to determine, based on information received orally as indicated earlier, what the maximum average undersize and undercut were on individual welds. And it was advised that the maximum oversize was always less than ⅛ of an inch and the maximum undercut always less than 1/16 of an inch and that these deficiencies were never around the full circumference of the weld. Tr. 724, 796, and 1241 (Meyers). Bechtel had the information on undersizing verified at a later date by the Cives Company when it subsequently was evaluating supposedly conflicting data supplied by the Daniel Corporation, which is discussed later in this Opinion. Tr. 796 (Meyers); Board Ex. 1, Encl. 2. We conclude that Intervenor's criticism is well founded to the extent that the Bechtel Corporation had no written support for its assumption that the maximum undersize was always less than ⅛ inch but relied solely on oral communications. And we also conclude that Applicant's letter of March 10, 1978 to NRC's Regional Director is somewhat misleading in indicating a documentation that no deficiencies were undersized greater than ⅛ inch. A communication from the Cives Company that its records do not indicate any welds more than ⅛ undersize is not, in our view, "documentation" as that term is normally understood. Applicant Ex. 6, p. 1 of attachment; Board Ex. 1, Encl. 2. Nor can the Board believe that verification of the same matter from field inspection reports referred to by the Bechtel Corporation in its August 10, 1977 Investigation Report on welded studs was other than by oral communication although a different conclusion would be reached by an ordinary reading of that statement. Applicant Ex. 4, p. 3. Whether these amount to a failure in quality assurance requirements we discuss at a later point in this opinion.

The Intervenor's third point, that revised load estimates presented an inadequate margin for error, was repeated in a number of its proposed findings of fact. *See* Joint Intervenors Proposed Findings 2, 30, 36, 37, 52 and 53. The case essentially states that the Applicant and Bechtel misrepresented the safety issue by indicating that despite the reduced loading capacity a sufficient design margin still existed and none of the plates embedded prior to June 9, 1977 possessed the potential to fail when in actuality four plates had an equal capacity to the reduced margin and 14 others were within a close margin (96 to 98 percent) of their actual loads. The Applicant's response does not substantially contest Intervenor's numbers but relies instead on the design safety factor of at least 2.0 against the yield limit state of the plate and the tensile capacity of the anchor rods, a determination of safety with which the Board concurs. Additional weight must be given to the fact that other conservative assumptions were made in the engineering analysis. Applicant Embed Testimony at 37. The testimony indicates that even though it is accepted engineering practice to load a plate to full capacity, there, nevertheless, remains a margin of safety in the design for embedded plates that at a minimum is slightly less than 2.0. Applicant Ex. 20, pp. 3-4. The fourth argument of Intervenor — if

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Bechtel's assumption about ⅛ inch undersize was erroneous, then plate failure could be expected — merges with its fifth point, that there was in fact substantial evidence of a significant number of plates reinspected with average weld undersize in excess of ⅛ inch. We treat both together because they involve discussion of the reinspection effort conducted by the Daniel Corporation, a controversial subject that occupied much of the Board's time and that of the parties during the hearing.

Subsequent to the discovery of possible welding defects in embeds by NRC inspectors on June 9, 1977, the Daniel Corporation was directed by the Applicant to inspect all embeds procured from the Cives Company. This inspection, covering all embeds at the site and those to be received thereafter, was different from and in addition to the Cives site reinspection which was initiated by Bechtel officials. (Board Finding 34) Some time after Bechtel submitted its final report — based on Cives reinspection information — on the welded embed problem, (August 10, 1977), which concluded that the plates were a completely acceptable product, inspection reports compiled by Daniel which contradicted the Cives data were furnished to Bechtel. The Daniel data indicated the existence of a number of plates with weld undersizes in excess of ⅛ inch. (Board Finding 35) There was extensive interrogation during the hearing on Bechtel's claim that it had no knowledge of the conflicting Daniel information prior to Bechtel submitting its final report or that Daniel was even inspecting plates on site. *See* Tr. 797 *et seq.*, (Meyers, Schnell). Regardless of where the truth lies, it is clear to the Board that if Bechtel did not know of Daniel's activities, it should have had such knowledge. The Applicant had directed the performance of Daniel's inspection work and Bechtel was the Applicant's design architect/engineer. It strains our credulity to believe that the Applicant would not advise Bechtel of an order to Daniel which impacted a Bechtel supplier, *i.e.*, Cives. Nor is it easily understood why Cives would have failed to notify Bechtel of Daniel's activities when both Cives and Daniel personnel were involved in a similar activity at the same place at the same time. There is evidence in the hearing that the Applicant knew in August 1977 of the large number of welding defects in manually welded plates that Daniel was discovering and there is also testimony that Daniel and Cives personnel knew of each other's efforts at the time. (Board Findings 36-37) Whether the Applicant or Bechtel knew of the Daniel information or ignored it, it is clear that it was an NRC investigatory team that initiated the review that attempted to reconcile the Cives and Daniel conflicting data. (Applicant Ex. 7, p. 1; Board Ex. 1, Encl. 4, p. 1) An explanation provided by the Applicant and Bechtel for their lack of information concerning Daniel's inspection results is that the surveillance reports from those inspections were accumulated in a nonconformance report procedure for onsite rework, which, being internal to Daniel, would not ordinarily be communicated to others. Nevertheless, due to the severity of the problem being investigated, in the Board's judgment, a lack of knowledge is not plausible.

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In an effort to reconcile the differences between the Cives and Daniel inspections, a two month review was undertaken by both Daniel and Bechtel to clarify the inconsistent data. This resulted in a conclusion by Bechtel that due to poor documentation, inconsistencies and errors, an engineering analysis of the Daniel data was inappropriate and, actually, impossible to accomplish. (Board Findings 38-39) The inadequate reporting of data by Daniel was attributed to the fact that its function during inspection was not to determine the amount or extent of weld deficiencies but to record only enough information to provide a basis for rework if that were required. This information was verified during the hearing by two employees from Daniel who were witnesses called by the Board. (Board Finding 40) In its review, Bechtel found that only 8 plate data reports out of 532 showed an average weld undersize greater than ⅛ inch and with information further refined by the Daniel review effort, the Applicant found only 10 of 364 embeds with such an average. Both Bechtel and the Applicant concluded that these data reports were too few and too unreliable to be used to characterize the embedded plates delivered at the site. Applicant Ex. 7, p. 3 and Ex. 6, p. 4. The Daniel Corporation also indicated that an engineering evaluation similar to what Bechtel had performed using Cives data, which assumed the maximum undersized condition around the complete weld-circumference, would not represent a true picture of actual conditions. And finally, Bechtel, the Applicant and Daniel reinspected 45 plates that had not been repaired which had been previously rejected by Daniel and agreed that the deficiencies observed were less than reported. (Board Findings 42 and 43)

Joint Intervenors argue, in relation to the Daniel's data, that adequate evidence was presented of a significant number of manually welded plates with average weld undersize greater than ⅛ inch. They point to both Bechtel's and Applicant's reviews of the Daniel data which reflected that 8 or 10 plates contained such deficiencies. Further, they insert in proposed findings a composite table purporting to show, based on Bechtel's calculations, a comparison between Daniel and Cives data which shows 26 plates having average weld undersize in excess of ⅛ inch with the Cives data in agreement with Daniel on 13 of the 26 plates. The Board cannot subscribe to Intervenor's arguments on either point. Leaving aside any discussion whether the Daniel data package, Intervenor Ex. 12, which was admitted for a limited purpose, or the composite table which makes its presence felt for the first time in proposed findings can be relied on for probative evidence by the Board, we believe neither can overcome a more fundamental objection. Neither allegation is substantive in the case. In order to arrive at a finding that Bechtel's assumptions were erroneous, based on Daniel data that either 8, 10 or 26 embedded plates possessed average weld undersize greater than ⅛ of an inch, one has to also assume that the weld undersize extends around the entire circumference of the anchor rod. There is no evidence in the record of the validity of that assumption. In addition, we have the testimony of Daniel's Project Manager, who was responsible for the compilation of the Daniel data, that the original inspection

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data were not sufficient for the performance of an engineering evaluation. Tr. Holland, p. 1358. Finally, there is uncontradicted evidence from one of Applicant's expert witnesses that even assuming the validity of the welding defects reported in the Daniel data, with such defects going around the full circumference of the anchor rods, it would not have affected the margin of safety or the load carrying capacity of the plates. In the expert's opinion, the weldments in the embedded plates could have been 25 percent smaller than required by the specifications and he testified that the Code was being changed to effect such a revision. (Board Finding 44)

When Bechtel calculated reduced load capacities, in its engineering analysis, it assumed, in addition to the ⅛ inch undersize, a 1/16 inch undercut for all anchor rods. It also concluded that deficiencies in the welds reported by Cives of unequal weld legs and poor weld profile (excessive convexity) did not affect weld performance. Based on this evaluation, and its analysis that safety of the plates was still assured with a reduced design capacity, Bechtel then requested and received the approval of SNUPPS and the NRC for exceptions to the Structural Welding Code. The exceptions permitted additional allowances for the vertical legs of the welds and undercutting, acceptance of unequal legs and the elimination of profile requirements. (Board Finding 45) Exceptions to Code requirements are the responsibility of architect/engineers on construction jobs since the Code requirements are considered as conservative guidelines. Fisher Tr. 773. The Intervenor challenged Bechtel's finding that a 1/16 inch undercut did not affect the load carrying capacity of the anchor rods since its (Bechtel's) analysis ignored the fact that some anchor rods were unthreaded. However, in addition to the fact that there is no evidence in the record to support this argument, the Applicant successfully counters the objection with its reply that an additional margin of safety is provided in the case of unthreaded anchor rods. *See* Applicant Reply to Proposed Findings, 27-28.

After Bechtel and the Applicant concluded that the conclusions reached in the 1977 report on the acceptability of manually welded plates embedded prior to June 9, 1977 was not contradicted by the Daniel data, the NRC ordered additional testing to be performed. It also inspected visually embedded plates substantially loaded by floor slab dead loads without seeing any signs of distress or overstress. (Board Finding 46) In the tests performed by the Applicant's consultants from Lehigh University, the testing was done to demonstrate the structural integrity of the welds in the 45 plates that had been rejected by Daniel but not as yet repaired. Six anchor rods on six different plates were selected by the NRC for bend testing and the direction of the bend was also directed by the NRC. Six anchor rods on six additional plates were selected by the Applicant for tension testing to their ultimate load. The tests were performed on welds selected as having the worst visual defects and appearances. (Board Finding 47) Six anchor rods were bend tested to 30 degrees without any signs of cracking or failure and six rods were tension tested to

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failure with three failing in the weld and the other three failing in the rod itself. The ultimate strength of the welds tested was greatly in excess of their design loads. The tests were observed by the NRC. (Board Findings 48-49) The Intervenor argues that the welds selected for the tests were not as defective as the worst welds found in the Daniel or Cives inspections nor did the tests deal with the kind of loads that the manually welded plates have to support. We believe these allegations unsupportable since the plates were ones previously rejected by Daniel and contained the worst available welds and, finally, the tests subjected the welds to the same shear forces that exist in the embeds that were embedded prior to June 9, 1977. Fisher Tr. 1150-1151.

Based on the engineering analysis of reduced load capacities, the review of the reinspection data of plates manufactured in the same time period, and the additional testing that was done on manually welded embeds, the Applicant and the NRC both concluded that the plates embedded prior to June 9, 1977 were capable of supporting their design loads. (Board Finding 50)

The Board is obligated in this summary of the manual weld issues to express a deep concern over the handling of the embed plate problem by the Applicant, the Bechtel Corporation and the NRC Staff. That concern relates solely to the manually welded plate controversy since we conclude the review procedure for machine welded plates was prepared satisfactorily and followed adequately. We also, however, need to state our apprehensions over the quality of work performance manifested in these proceedings by the Daniel Corporation and Cives Company. The following reflects the Board's uneasiness as a result of the evidence produced in this hearing:

1. Performing an evaluation of reinspection data without written documentation as the Bechtel Corporation did in this case is not only a questionable procedure but a violation of quality assurance requirements.
2. Assuming the truth of statements by the Applicant and Bechtel that they were unaware of Daniel's inspection data for a period of months — statements of which we have some doubt — this lack of knowledge does not foster confidence in either company that they were carefully monitoring construction developments and progress at the Callaway facility.
3. The inconsistent reporting of weld deficiencies by Daniel inspectors demonstrates a supervisory weakness at the Daniel Corporation irrespective of any instructions that its employees were to inspect embeds on an accept or rework basis.
4. The acknowledgment by the Cives Company that it repaired 20 percent of the 400 embeds it reinspected at the plant site raises, in our judgment, serious questions of the quality of work that was received from that fabricator.

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5. Finally, we must express an overriding concern that NRC inspection officials permitted the question of the integrity of embeds installed prior to June 9, 1977 to stay unresolved for such a lengthy period of time. Over three years elapsed from the date of reporting the original suspected weld deficiencies until NRC's final evaluation was transmitted. It is clear from the evidence that the issue of the acceptability and adequacy of the manual welded embeds was referred to NRC Headquarters both in November 1977 and April 1978. It is also clear that no action ensued until the Inspection and Enforcement Office of Region III of the NRC again initiated its own review in April 1980. No information has been provided in the record for this inaction on the part of the NRC Headquarters Office. (Board Finding 51)

Quality Assurance Failures

Many of the activities discussed herein were considered by Joint Intervenors to be violations of quality assurance requirements. We agree with certain of the Intervenor's conclusions, but not with others.

The Board does not concur with Intervenor's argument that testimony showing there was some difficulty with the use of embeds at other nuclear facilities or that there were welding problems at Callaway in meeting Code specifications indicates a failure to establish measures for selecting appropriate materials as Criterion III of 10 CFR Part 50, Appendix B requires. As we have indicated, *infra*, the evidence reflects the industrial usage of embedded plates and also reflects that welding codes are designed to be adaptable to revisions in welding requirements.

The Board has already expressed its judgment that the apparent lack of knowledge concerning Daniel's inspection data was a failure in communication and under the circumstances here a potentially serious breakdown in the fabrication of safety-related materials, *i.e.*, embedded plates. The negligence represents a violation of quality assurance Criterion XVI of Appendix B. Further, it is the Board's view that the failure to require the Cives Company to produce, in its reinspection effort, a more extensive report of the results thereof was a violation of Criterion XVII. The Cives effort was aimed at finding the extent of a problem that could affect quality. The adequate recording of activities affecting quality is one of the objectives of Criterion XVII. Accordingly, it would have been more in keeping with the purposes of effective quality assurance for an adequately documented record to be compiled of Cives reinspection activities.

The Joint Intervenors also cite the Applicant's failure to notify the NRC of the manual embed deficiencies as is required by 10 CFR Part 50.55(e) for significant deficiencies that need extensive evaluation, redesign or repair. Although the Board has expressed its concern with the length of time NRC took to review the Applicant's handling of the manual embedded matter, we are unable to fault the

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Applicant with not filing a 50.55(e) report since it completed its original analysis of the problem in a prompt manner. It is a moot question, in any event, since the NRC certainly had notice of possible embedded deficiencies from the date its own inspectors reported welding defects in June 1977.

Outside of the failures reflected herein, the Board finds no other negligence affecting quality assurance requirements on the embed contention. The Applicant did undertake an analysis of the welding deficiencies, effected a revision in Code specifications to accommodate changes in the fabrication of embeds that were found necessary and also imposed stricter inspection requirements. These actions, occurring shortly after the suspected problem of welding defects, were compatible with proper quality assurance activities. Whether the Applicant's actions were adequate to assure the safe functioning of the embeds installed at the facility before June 9, 1977 we discuss in our conclusion below.

Conclusion

As we have indicated above, the Board finds a serious disregard by the Applicant and its major contractors for quality assurance considerations in the handling of certain aspects of the manual welded embed plate problem. The question before us is whether or not these activities constitute such a level of negligence that the quality of safety-related materials cannot be assured and as a consequence, the safe operation of the Callaway plant is thereby threatened. The central issue of this contention then is: If the assumption used by Bechtel in its engineering evaluation, that no weld deficiency was more than ⅛ inch undersize was an incorrect assumption, could plate failure among those embedded prior to June 9, 1977 be anticipated. We think not. We conclude the Applicant has carried the burden of proof on this issue on the following grounds:

1. A factor of safety has been designed into the load capacities of both machine welded and manually welded embeds of at least 2.0 against the yield limit state of the plate and the tensile capacity of studs and anchor rods.
2. The actual loads imposed on most embedded plates is considerably less than the allowable design capacity, thereby increasing the design safety factor to more than 2.0.
3. Tension tests to failure were performed on weldments of manually welded plates that had been rejected by Daniel inspectors but not repaired and a safety factor in excess of 3.0 was demonstrated.
4. Evidence that welding code revisions will permit weldments in the future to be 25 percent smaller than those required for the embed plates at Callaway.
5. Testimony of Dr. J. W. Fisher, an expert in weldments and structural analysis from Lehigh University whose opinions and competence were

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> persuasive to the Board, that, even assuming the validity of the Daniel data with the weld defects reported extending completely around the circumference of the anchor rods, that neither the required margin of safety nor the load carrying capacity of the manually welded embeds would have been affected.

Finally, we also conclude that the Applicant has submitted adequate evidence of the safety of machine welded embeds based on the inspections conducted by the Cives and Daniel organizations, the probability analysis carried out by the Bechtel Corporation and the load tests performed successfully on selected machine welded plates installed before June 9, 1977.

B. I.C.1. Honeycombing in the Reactor Building Base Mat

In this contention Joint Intervenors challenge whether there exists adequate assurance that there are no defects in concrete of the reactor building base mat beyond those already known. They challenge the reliability of the methodology that was used for testing the base mat as well as the inferences drawn from the tests. Additionally, they question the adequacy of the quality control and quality assurance procedures that were used before, during and after the placement of concrete for the base mat. Relevant to this consideration is whether individual deficiencies in quality control are sufficiently numerous and serious that when considered collectively they would indicate a failure or breakdown of the Applicant's quality assurance program as a whole.

The reactor building base mat is a flat circular slab of concrete which is 154 feet in diameter and 10 feet thick. The base mat serves as a foundation and base for the reactor building. The tendon access gallery is located directly below and along the outside edge of the base mat and continues around its circumference. The lower surface of the base mat forms the ceiling of the tendon access gallery. Tendons are steel cables which cross over the reactor dome for the purpose of applying compressional stress to the reactor building shell and dome after the concrete hardens. The tendons are anchored at both ends by steel structures called trumplates. The trumplates are embedded in the concrete ceiling of the tendon access gallery. There are 172 trumplates in the Callaway reactor building. Applicant Base Mat Testimony, ff. 227, at 9-11 and Figure 1; Varela Testimony, ff. 396, at 2-3.

Concrete for the reactor building base mat was placed over a 62-hour period from April 6 to April 9, 1977. Six thousand seven hundred and twenty (6720) cubic yards of concrete were used. Two shifts, each involving approximately 190 construction crafts, engineering, quality control and supervisory personnel, were used in alternate fashion to accomplish the concrete placement. Three NRC Staff inspectors were present during the concrete placement and one or more of these inspectors observed most of the operation. (Board Finding 52)

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Honeycombing in the concrete ceiling of the tendon access gallery was found by construction personnel after the concrete had hardened and the forms and shoring were removed. Honeycombing is a defective condition in hardened concrete which consists of small voids dispersed through the concrete giving it a popcorn appearance and, of course, causing it to be weakened. The defect may or may not be a serious safety concern depending on its location and extent. Honeycombing that was found on the ceiling of the tendon access gallery, which is part of the reactor building base mat, was taken as a serious matter by both Applicant and Staff since there were 14 locations where it undermined the base of the tendon trumplates which ultimately would be loaded in excess of 1,400,000 pounds each. (Board Findings 53, 54, 55)

The honeycombed areas were chipped out to sound concrete to determine the extent of the defect at each location and to prepare the cavities for repair. Repairs were done by filling each cavity with a high strength grout which formed a bearing surface for the trumplates having a strength at least as high as the sound concrete of the base mat (Board Findings 54, 61)

The Applicant had performed nondestructive testing of the concrete in the base mat above the tendon access gallery to determine whether hidden concrete imperfections existed in the interior concrete above the trumplates. Testing was performed with a soniscope which measures the velocity of sound as it travels through concrete. High sound velocity (above 12,000 feet per second (ft/sec)) indicates uniform dense concrete; low velocities (5000 ft/sec) reveals poor concrete containing voids, honeycombing or cracks. Soniscope testing is an accepted technique that has been utilized for more than 15 years. (Applicant Base Mat Testimony, at 23-27; Varela Testimony, at 5)

Multiple soniscope measurements were taken at each of 44 trumplates in the tendon gallery which represent 25 percent of the trumplate locations in the tendon gallery. Seven hundred and sixty (760) individual measurements were made of which 103 were unsuccessful. Unsuccessful shots or signals are caused by poor contact between a transducer and rough concrete or by a minute plane of separation between concrete and a steel plate which blocks the signal but does not indicate internal voids or honeycombing. (Applicant Base Mat Testimony, at 25-28; Applicant Ex. 2, pp. 15-17)

Measurements were taken: (1) vertically through concrete, (2) vertically through concrete and a steel plate which was part of the trumplate, and (3) at an angle through the concrete behind the trumplates. All measurements showed velocities in excess of 15,000 ft/sec. Coefficients of variation ranged between 1.0 and 2.1 percent for these measurements, indicating reliable and reproducible data. (Applicant Ex. 2, pp. 15-19)

The tests showed: (1) concrete above the gallery and the trumplates uniform in composition and strength, (2) concrete tested has a high compressive strength, (3) no evidence of internal honeycombing in concrete in the 44 trumplate areas, and

(4) the results indicate that, based on a 25 percent sample, internal honeycombing probably does not occur in the base slab. (Applicant Base Mat Testimony, at 25-28; Applicant Ex. 2, p. 21) (Board Finding 60)

Staff concluded the test was appropriate and the number of sample locations was conservative. (Varela Testimony at 6, 8; Staff Ex. 5)

Our review of the evidence pertaining to causes of honeycombing, repairs, soniscope testing, and loading of structures in the tendon access gallery lead to the conclusion that there exist reasonable assurances that no concrete defects of importance to safety exist in the tendon access gallery portion of the base mat. Intervenor's issue related to dry-pack repairs was found to be insignificant to the safety of the base mat. (Board Findings 64, 65, 66, 67, 68)

The tendon access gallery, however, constitutes only 19 percent of the entire base mat. Because of the nature of the soniscope which was used for nondestructive testing, it could not be used to test the remaining 81 percent of the base mat. Thus, if reasonable assurance of integrity of the remaining base mat is to be obtained, it must be done by indirect means since few direct observations exist to confirm it.

The indirect evidence for base mat integrity, however, is substantial. The physical evidence from the tendon gallery shows that honeycombing was a surface phenomenon. All that was ever discovered was first discovered by visual observation of surfaces. The soniscope tests for interior defects throughout the full thickness of concrete, on the other hand, did not reveal a single instance of faulty concrete above the tendon gallery. (Board Findings 56, 60)

The cause of surface honeycombing in the tendon gallery is due principally to inadequate vibration of fresh concrete in areas specially congested and hampered by steel embedments. Since no such cause existed in the interior of the base mat, there is no reason for suggesting that concrete was not vibrated adequately during placement. (Board Findings 57, 58, 81)

The base mat placement began on one side of the base mat and progressed to the other without special reference to the tendon gallery. It is unlikely that substantial changes in materials, workmanship, equipment, or methodology could take place unnoticed during such a relatively short intense work period which would lead to either better or worse workmanship focused in the tendon gallery as compared to the rest of the base mat. We therefore conclude that the base mat pour was accomplished with reasonable consistency and uniformity of materials and workmanship from beginning to end. The direct observations of the integrity of interior concrete in the tendon gallery, therefore, apply to the base mat as a whole even though the sampling technique used by the contractor cannot be regarded as a true random sample of the entire base mat.

Similar reasoning leads us to conclude that we cannot rule out with certainty the existence of honeycombing on the lower surface of the base mat (*i.e.*, that portion resting on earth and therefore inaccessible to inspection). We note, however, that

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the accessible surfaces of the base mat (top and vertical sides) were inspected and no imperfections were found. (Board Findings 79, 83)

The frequency and magnitude of honeycombing in the tendon gallery gives us a fair sample of what reasonable constancy in materials and workmanship might produce on other lower surfaces in the base mat. Considering, however, that the tendon gallery was more congested with embedded steel items than the lower surface of the base mat in general, we conclude that whatever honeycombing might exist on the remaining lower surface its frequency and magnitude are not likely to exceed those already found. (Board Finding 81)

The honeycombing that was found, however, would be harmless to the overall safety of the reactor building if located in other parts. The concern in the tendon gallery stemmed from the fact that honeycombing undermined the base plates of some special structures — the tendon trumplates — which would ultimately carry very high loads. No such special load bearing structures exist over the lower surface of the base mat in general. The Board therefore concludes that even though honeycombing of the general frequency and magnitude as that already found might exist on the lower surface of the reactor base mat, such imperfections would not jeopardize the function of any special load bearing structure nor would they create a concern for the general integrity of the base mat. (Board Finding 84)

Adequacy of Applicant's Quality Assurance and Quality Control Procedures

The Board has been unable to find serious defects in the overall quality assurance procedures followed by the Applicant in connection with construction of the reactor building base mat. The evidence shows that the essential components of an overall program were present in this case. These components include preplanning and inspection, supervision and inspection during concrete placement, and inspection, testing and repairs of defects after the task was finished. (Board Finding 74)

It appears that Intervenor's objections stem from an unrealistic assumption that the only acceptable performance of a constructor would be flawless work in the first instance. While that is an important goal we conclude that it is an unrealistic approach to safe construction since prevention of flaws is only one aspect of a multifaceted program. In this instance it is apparent that defects in concrete of the reactor base mat occurred in spite of reasonable efforts to prevent them. However, subsequent inspections disclosed the defects, they were reported internally and to NRC, tests were made to determine the extent of the imperfections, and repairs were made. (Board Findings, 66-72)

These are actions we expect of a functioning quality assurance program. A serious deficiency in any of the components might lead to serious questions about

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the overall program. However, in this case the program worked properly and it led to the desired result which is a structurally sound base mat.

Joint Intervenors assert a number of reasons why the Applicant's testing may not demonstrate the integrity of the tendon gallery. Their assertion that the soniscope method is faulty because it does not take account of the fact that sound waves may go around defects in concrete reflects a misinterpretation of the physical principles of the instrument. The deflection of sound waves around defects in concrete is the phenomenon which enables the detection of such defects. The added time required for sound to traverse a tortuous pathway relative to an unobstructed pathway is what is measured and what leads to the interpretation of reduced velocity and faulty concrete if it exists. (Board Findings 75-76)

Intervenor's argument that the velocity of sound in steel may account for the high sound velocity measured in tests of the base mat is similarly misguided. Expert testimony shows that the interface between steel and concrete often results in a degraded signal or complete obstruction of the signal. Many of the attempted soniscope measurements failed because they were taken from steel surfaces which were interfaced with concrete. While sound might well have a high velocity in steel, we need not take notice of that fact as urged by Intervenor since it is beyond dispute that the base mat consists of concrete containing embedded steel. It is the existence of concrete-steel interfaces which might influence the velocity of sound; the sound signal may be halted by interfaces or simply go around the obstruction. In either case the result could not be an apparent increase in sound velocity. (Board Finding 77)

Intervenor's discussion of the errors possible in aligning a cross hair on an oscilloscope which is necessary to measure the velocity of sound is also without merit. They assert that the testing report does not discuss the margin of error or with what bias such factors might have been resolved. This is simply inconsistent with the facts, since the Wiss, Janney, Elstner report (WJE was the firm selected by the Applicant to perform testing), Applicant Ex. 2, p. 19, lists a table showing average velocities of sound as transmitted through concrete and standard deviations and coefficients of variation for each average. We expect nonsystematic errors of measurement including instrument reading errors to be reflected in the calculated standard deviations and coefficients of variation. The coefficients of variation actually observed range from 1.0 to 2.1 percent. These errors are sufficiently small to conclude with confidence that the measured sound velocities reliably exceed the threshold of concern (12,000 ft/sec) below which the integrity of concrete could be in doubt. (Board Finding 78)

Joint Intervenors assert that the Applicant's quality assurance program failed to provide proper documentation regarding the reactor building base mat problems. They believe that the documentation that exists demonstrates weaknesses in work procedures and quality control procedures that were governing at the time of base mat placement. Joint Intervenors specifically object that: (1) concrete placement

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reports were not submitted by all quality control inspectors after the base mat was poured and (2) the documentation of the existence of honeycombing in the reactor base mat was not submitted in a timely fashion since more than a month passed after completion of concrete placement before a nonconformance report was written. (Board Finding 85)

The Staff inspector who was present at the time of concrete placement subsequently cited the Applicant for an infraction because each of the Applicant's quality control inspectors did not submit individual concrete placement reports. After the citation was issued the Applicant undertook to remedy the deficiency in documentation by having each inspector who was present during the time of concrete placement sign a concrete placement report. Each concrete placement report was similar in information content and appearance and was signed by the individual inspectors during a period covering July and the first part of August of 1977. In the Applicant's view the signatures and the absence of comment on the concrete placement reports provides assurance that the individual inspectors observed no deficiencies during the pour. It could not be ascertained directly from the reports, however, what activities the signature of each inspector was verifying that he had witnessed. (Board Findings 86, 87, 88)

The NRC Staff inspector interviewed some of the inspectors after receiving the concrete placement reports and verified that they had observed no deficiencies during concrete placement. (Board Finding 89)

The Board concurs with Joint Intervenors that the procedure followed here was defective. We criticize the documentation procedure but do not find evidence that the inspectors failed to perform their duties at the time the concrete was actually placed. Specifically, we find that the placement reports signed without comment some three months after the event took place to be essentially worthless. (Board Finding 90)

We are unable to determine from the belated reports whether they were signed by the inspectors in a perfunctory manner as simply another burden of paperwork or whether the signatures have genuine meaning. While some interviews were done by the Staff inspector, the interviews were not documented. Thus, no genuinely useful written record exists which would document the observations of inspectors during the placement of concrete in the base mat. Assuming that such documentation is necessary, as appears to be the case from the Staff citation, we should insist that it be substantive and not a mere paper shuffling exercise. In this instance the Board concludes that an appropriate procedure might have been to interview each inspector and produce a written record of the interview for the inspector's signature. (Board Findings 90, 91)

The Board, however, can find no deficiency with regard to the timing of the nonconformance report. Concrete placement was finished on April 9 and a nonconformance report from the Daniel Corporation to Bechtel was filed on May 11, 1977. In the approximate month between completion of the base mat pour and

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the filing of the first nonconformance report, the concrete was left to harden, the concrete forms were then removed, inspections were performed and honeycombed areas were chipped to sound concrete. The chipping operation was an essential prerequisite to determining the extent of unsound concrete. In light of the actions that had to be taken, the elapsed time of one month from the termination of the pour appears reasonable. Upon receiving the May 11 nonconformance report, Bechtel rejected it, requesting more detail before disposition. The Daniel Corporation then proceeded to draw detailed maps of the extent of honeycombing in the tendon access gallery and outlined in detail a proposed repair method. The second nonconformance report which was acceptable to Bechtel was filed on June 27, 1977. (Board Finding 92)

The Board finds no reason for concluding that there was a general breakdown in Applicant's quality assurance procedures. The quality assurance procedures employed in this instance worked properly in that precautions were taken to prevent deficiencies; deficiencies that occurred in spite of the precautions were found promptly; appropriate reports and tests were made; and repairs were made which restored the defective areas to original design specifications. While we found deficiencies as regards the handling of concrete placing reports on the part of both Staff and Applicant and in the requirements for testing dry-pack concrete, these appear to be isolated matters and not evidence of gross failure of the Applicant's quality assurance program.

Conclusions

The Board concludes that the Applicant took reasonable steps in advance of concrete placement to prevent the occurrence of concrete imperfections. The concrete imperfections occurred in spite of precautions and not due to neglect of quality assurance. When concrete imperfections were discovered they were reported both to Bechtel and the NRC and reasonable plans were established for testing and repair. The soniscopic testing demonstrated that there were no hidden concrete imperfections in the base mat above the trumplates. The surface repairs that were undertaken assured adequate bearing surfaces for the trumplates, which would ultimately carry very high loads. Loads were later imposed on the trumplates, as high as 1,600,000 pounds without failure of trumplates or distress in concrete. The issues raised by Intervenor concerning the use of dry-pack are insignificant and have no bearing on safety of the structure. The Board concludes that there is no reason to doubt the integrity of the reactor base mat or the peformance of the tendon trumplates.

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C. I.C.2. Honeycombing in Reactor Building Dome

The Board denied a motion for summary disposition of this contention prior to hearing after concluding that there existed a substantial factual dispute as to the integrity of the reactor dome and quality control procedures that were followed for discovery, reporting and resolution of this matter. Nevertheless, Joint Intervenors announced at hearing that while they did not abandon the contention they would not conduct cross-examination of Applicant's or Staff's witnesses since they did not feel that they could contribute to development of a sound record on this subject.

After reviewing the prefiled testimony of both Applicant and Staff the Board concluded that there were remaining matters to be explored and it called the witnesses for Board examination. The Board questioned the witnesses on both quality assurance procedures and the reliability of the testing and analysis that was done that led Applicant and Staff to conclude that there were no undiscovered defects in the reactor dome which would jeopardize its integrity. The Board found the witnesses of Applicant and Staff to be forthright and credible. No evidence was uncovered in the Board examination which was at variance with their prefiled testimony.

In this contention Intervenor challenges whether there exists adequate assurance that there are no imperfections in the concrete of the reactor building dome beyond those already discovered and repaired by the Applicant.

The reactor building dome is the roof of the reactor building. It is constructed in the shape of a hemisphere with an inside radius of 70 feet. The concrete in the dome is 3 feet thick. Layers of reinforcing steel run both horizontally and vertically within the concrete near both the inside and outside surfaces. The inner side of the concrete dome is lined with a one-quarter inch carbon steel liner plate which assures leak-tightness of the building. The liner plate also served as a concrete form for the inside surface of the dome during concrete placement.

Concrete for the hemispherical reactor dome was poured in a series of "lifts" or layers placed sequentially starting from the vertical walls of the reactor building and working upward towards the top of the dome. Most of the concrete was placed without special problem; however, difficulties were encountered as construction approached the top. This portion of the dome was poured without the use of outer forms which would constrain the flow or movement of concrete after placement. The angle of the dome ranged from 45 degrees to near horizontal at the top. At these angles and without forms, the freshly placed concrete tended to subside downward as it was being consolidated by workmen using vibrating machines. The migrating concrete was moved to upper levels by workmen to restore the desired surface. Movement of concrete was a surface phenomenon because of the lack of external constraint at the surface. (Board Findings 94, 95)

When the concrete hardened, workmen noted surface honeycombing in four areas of the dome. Upon chipping these areas to sound concrete, it was found that there was some loss of bond between concrete and steel reinforcing bars at depths of 4 to 6 inches from the surface. The defects consisted of small gaps ¼ to ½ inch in diameter on the lower side of the reinforcing bar. Later when some blockout forms were removed, three additional areas of honeycombing were found making a total of seven areas known to contain defects. (Board Findings 96, 99)

The Daniel Corporation, acting in its role as constructor for the Applicant, filed a nonconformance report for approval by Bechtel Corporation on November 10, 1980. NRC was not notified at this time since Daniel inspectors determined that the imperfections did not represent a significant deficiency in quality control, construction or engineering and were not reportable under the provisions of 10 CFR Part 50.55e. Bechtel and Union Electric personnel, however, questioned whether a more rigorous investigation of the significance and extent of the imperfections should be performed since there existed the possibility that additional areas of imperfections might be present. Union Electric then notified the NRC Staff on December 5, 1980 of a potentially significant deficiency. (Board Finding 98)

Union Electric and Bechtel decided to conduct tests of the dome using both destructive and nondestructive methods to determine whether there were other areas of concrete imperfections. Techniques used included nuclear densometer testing, boroscopic examination, microseismic (pulse echo) examination, selective excavation and engineering analysis. The nuclear densometer and boroscope examinations did not reveal further evidence of unsound concrete near the outer surface of the dome which is the only area in which they are effective. (Board Finding 100)

The pulse-echo technique was used at 1,671 locations as a means of searching for imperfections throughout the three-foot thickness of the dome. This technique works by generating a sound pulse in the surface of concrete which passes through the test section and reflects from the opposite surface back to a detector at the surface. The time of passage is measured with the aid of an oscilloscope. In normal concrete the oscilloscope display shows two pulses or peaks separated along a horizontal axis. The first pulse is from the initial signal and the second is from the reflected signal. Imperfections are detected because they reflect sound back to the detector from an interior location. This results in an additional pulse being displayed on the oscilloscope screen between the two normally present. The pulse-echo method has been used extensively for similar applications and is reliable and accurate. (Board Finding 101)

The results of the pulse-echo testing showed that of 1671 tests, 28 or 1.68 percent were of possible structural significance. The readings, however, were sporadic in occurrence. None of the areas tested showed a sufficient number of such readings to classify the area as structurally defective. (Board Finding 102)

The Applicant excavated concrete at six test points which had shown defects by the pulse-echo method. At two of these points no imperfections were found, while at four points small air gaps on the downhill side of the reinforcing bar were found.

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The excavations confirm that a correlation exists between the pulse-echo readings and the actual imperfections. The nature of the imperfections serve to confirm the original conclusion that they were caused by subsidence. (Board Finding 103)

The results of testing and evaluation of the reactor building dome are contained in Bechtel's "Final Report of Containment Dome Concrete Imperfections at Callaway Unit 1" dated March, 1981. Staff review of that document concluded that more testing was needed. Additional pulse-echo tests were done and Applicant, and Staff concluded that the extent of imperfections was clearly identified. (Board Finding 104)

The effect of the concrete imperfections was to reduce the bonding between the reinforcement bar located near the outside dome surface and the concrete. (Ma Testimony, at 3) This kind of imperfection was not critical because (1) the imperfections are primarily limited to the hoop bars and do not affect the meridional reinforcement; (2) the type of load placed upon the hoop bar (an axisymmetric loading) is such that there is no change of stress along the bar and therefore sporadic imperfections would not affect their load carrying capabilities; and (3) the design margins for the hoop bars and radial ties are more than adequate to overcome any minor lack of bond due to the sporadic imperfections. (Applicant Dome Testimony, at 25)

An engineering analysis made by the Applicant showed that even if the bond between concrete and steel were lost for 50 percent of the entire reinforcing bar near the outer surface of the dome, the structure would retain sufficient strength to meet all design and accident load conditions. The actual loss of bond was minor and sporadic (consisting of ¼ to ½ inch voids along reinforcing bar near the outer surface at 28 locations). The design strength margins of the dome far exceeds the minor loss of strength that could be attributed to the small voids in concrete. (Board Finding 105)

The Staff concluded by independent analysis that the concrete had higher than required compressive strength and that the minor loss of bonding would not affect the structural integrity of the dome since ample margins of safety exist principally because of extra steel reinforcements. (Board Findings 106, 107)

No repairs of imperfections revealed by the pulse-echo investigation were necessary because of the design margins of safety in the structure. The areas which had previously been chipped to sound concrete, however, were repaired by filling with concrete of the same characteristics used for the dome construction after first preparing the cavities to ensure adequate bonding. (Board Finding 99)

Adequacy of Applicant's Quality Control

No evidence was brought out in the Board's questioning of witnesses which would call into question the quality control procedures used by the Applicant in

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relation to inspection and discovery of defects, reporting, testing of the dome, or the repairs.

The evidence from the dome episode shows that the Applicant's actions demonstrated an affirmative commitment to quality of construction. The Applicant and Bechtel might have rested on an easy concurrence with the Daniel Corporation's initial assessment that the defects were minor. (This later proved correct but could not be known with certainty at the time.) The Applicant instead ordered additional testing which would ascertain the full extent of concrete imperfections in the dome. The testing itself was comprehensive in that it utilized several different methods and many individual measurements. As indicated, the pulse-echo testing alone was systematically performed at 1671 points. The defects that were revealed proved in final analysis to be structurally insignificant. (Board Finding 108)

The Staff also demonstrated a skeptical and analytical approach during the resolution of this problem. At one point it requested removal of additional forms in the dome which subsequently revealed more imperfections and at another required even further pulse-echo testing to satisfy itself that the full extent of imperfections were known. The Staff engineering analysis was independently performed rather than relying on review of the Applicant's analysis.

Conclusion

The Board concludes that the Applicant has adequately discharged its burden of proof on contention I.C.2. Contrary to the contention, the full extent of concrete imperfections in the reactor building dome is known from tests. Engineering analysis shows that the integrity of the structure is not in doubt because of the minor nature of the imperfections and the compensating design margins inherent in the structure. Additionally, there is no evidence related to the discovery or resolution of this matter which would suggest an overall failure or breakdown of the Applicant's quality assurance or quality control programs.

D. II.A.1. SA-358 Piping

SA-358 is an ASME material specification for a type of welded stainless steel pipe which is widely used for pipe sizes greater than eight inches in diameter. The pipe is made from plate by forming and rolling the plate into a continuous tubular shape. The resulting longitudinal seam is then welded, usually by the submerged-arc process, with the weld made from both the inside and outside surfaces. (Finding 109)

A Daniel pipefitter in the process of preliminary work on the pipe spool piece prior to fit-up for welding noticed an internal weld surface irregularity in the SA-358 pipe in question. He brought the matter to the attention of Daniel quality control personnel, who observed the irregularity and possible ovality/thin wall conditions. The inspector had an ultrasonic test performed on the pipe which indicated that a thin wall did exist. A nonconformance report (NCR) was generated and a "hold tag" was placed on the pipe. (Finding 110)

The Material Specification for SA-538 piping allows an outside diameter variation of 1 percent. The pipe in question has a nominal outside diameter of 10.75 inches, not including the allowable weld reinforcement of 0.125 inches. Measurements taken at the request of the NRC Staff showed a maximum outside diameter variation of 0.092 inch or 0.86 percent, within the 1 percent limit. (Finding 111)

The pipe in question has a specified minimum wall thickness of 0.874 inch. An actual minimum thickness of 0.814 inch was found in the pipe's inservice inspection weld preparation area, which had been counterbored. Bechtel performed two calculations as provided in ASME Section III, Article NC-3640 to determine the acceptable minimum wall thickness for this piece of pipe. The calculations yielded acceptable minimum wall thicknesses of 0.711 and 0.795 inch, respectively. Independent calculations were performed which verified Bechtel's findings. (Finding 112) The Board agrees that the counterbored area did result in a wall thickness below the specified minimum thickness, but finds that the actual minimum thickness of 0.814 inch is adequate.

The third irregularity raised in the contention is that the pipe "had rejectable weld defects on the inside of a longitudinal seam weld." The hearing on this claim addressed irregularities, and their potential causes, of several types — including excess reinforcement, overlap, and fissures.

Daniel measured an area of weld reinforcement on the inside of the SA-358 pipe with a reinforcement height of 3/16 inch and documented it in a nonconformance report dated April 30, 1979. While Bechtel initially, erroneously dispositioned this NCR, it is clear that there was a nonconformance as to the reinforcement height, since ⅛ inch is the maximum permitted by SA-358. Apparently recognizing the error, Daniel elected to rework the item in accordance with its approved procedures, to bring the weld into compliance with the ASME code. The excess weld reinforcement was reworked by simple removal of the excess material by localized grinding. Joint Intervenors have alleged that this nonconformance was not repaired or reworked in accordance with documented procedures. However, Daniel could have first initiated a deficiency report for rework (rather than an NCR), and simply reworked the item. Instead, a more conservative approach was taken by first seeking the designer's review of the matter. (Board Finding 113) The Board finds that Daniel acted properly in assuming the responsibility to correct the nonconformance.

The Daniel NCR also identified a condition described as overlap in the same area as the excess weld reinforcement. The overlap apparently was excess weld material which had rolled over onto the surface of the pipe material. Bechtel

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advised, in its disposition of the NCR, that overlap is not listed in the ASME code as a rejectable condition for radiography. This is because overlap does not affect the volumetric quality of the weld. Overlap is a condition that occurs at the intersection of the weld with the pipe material surface, but could not propagate through the thickness of the weld because it is in the wrong plane for propagation. Nevertheless, the overlap was reworked by the grinding process discussed above with respect to excess reinforcement. (Finding 114)

Counsel for Joint Intervenors extensively cross-examined the witnesses on the possibility that the weld defect might have been caused by "drop through" or "melt through." In addition, questions were asked on whether there might be cracks or fissures in the weld. (Board Finding 115)

Melt-through occurs in a submerged arc weld of the type used to weld SA-358 piping when total passage of both weld metal and the flux to the other side of the weld occurs. Drop-through is a similar condition, although less extensive. Both melt-through and drop-through are visible conditions. There are no reports that melt-through was visually noticed, and photographs of the weld in question reveal no evidence of drop-through. Not only would melt-through be visible, it would also be detectable on radiographs because of the resultant development of porosity in the weld. Radiographs of the weld reveal no such defect. In addition, testimony indicated that the presence of overlap indicates drop-through could not have occurred. (Findings 116, 117) The Board concludes that no drop-through or melt-through occurred in this weld.

In NRC's investigation of this piece of pipe, an allegation was addressed that the weld was cracked. Photographs of the weld exhibit two fissures which could have been mistaken for a crack. The indications identified as fissures were in the excess material and not in the weld itself. There was testimony that the indications described as fissures were actually the result of overlap where the excess weld metal came out on the surface of the pipe without wetting the pipe. If fissures existed in the weld, they would have been visible in radiographs. Radiographs reveal the weld to be free from defect. (Finding 118) The Board, therefore, finds that there were no cracks or fissures in the weld of the pipe.

The excess weld material was removed from the pipe by grinding, although the pipe would have been able to perform its function without this removal. The Staff reviewed both the pipe itself and radiographs of the pipe taken subsequent to grinding. The Staff found that the pipe in its present condition is free from defects. The Board agrees.

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Conclusion

The Board finds that the record developed with respect to SA-358 piping does not reveal a breakdown in Applicant's quality assurance program. The weld defect in question, a relatively minor one, was discovered by Daniel personnel and dispositioned by Daniel. The weld defect was removed, and the pipe was shown to be adequate with respect to ovality and wall thickness.

E. II.A.2. SA-312 Piping

SA-312 is an ASME material specification for both seamless and welded stainless steel pipe. Welded SA-312 pipe is made from plate by forming and rolling the plate into a tubular shape. The longitudinal seam is then autogenously welded (without filler metal) by the gas tungsten arc method. The weld is made from both the inside and outside surfaces for double-welded pipe. (Finding 119)

Those safety-related systems which contain double-welded SA-312 pipe are designated as ASME Classes 2 and 3 (seamless pipe only was used for systems designated as ASME Class 1). Under the rules of the ASME Code, welded piping is required to meet all the tests and examinations prescribed by Section III. The material specification for SA-312 requires chemical analysis, tension tests and flattening tests to be performed on each lot of pipe. The material specification also requires each length of pipe to be hydrostatically tested. ASME Section III requires that welded pipe for use in Class 2 systems be nondestructively examined by one of the following methods: ultrasonic, eddy current, magnetic particle, liquid penetrant, or radiographic examination. It is usual for pipe manufacturers to select the ultrasonic method for SA-312 pipe as other methods are not suitable for large diameter pipe. (Finding 120).

The problem addressed in Subcontention II.A.2 with SA-312 pipe is centerline lack-of-penetration (CLP). CLP occurs in autogenously double-welded SA-312 pipe when complete through-wall fusion does not occur between the inside and outside welds during welding of the longitudinal seam. A plane then exists in the center of the pipe wall between the two weld passes where the original plate edges are tightly abutted but not fused. (Finding 121)

This problem with SA-312 piping is not limited to the Callaway facility, but is generic in nature. On September 27, 1978, the Arizona Public Service Company informed the NRC that Pullman Power Products (PPP), a fabricator of safety-related piping spools for use in the Palo Verde Nuclear Generating Station, discovered longitudinal weld defects in ASME SA-312 type 304 austenitic stainless steel pipe supplied to Pullman by the Youngstown Welding and Engineering Company (YWEC). The defects were identified during the radiographic examination of circumferential shop assembly welds. Forty-four percent of the completed and partly fabricated subassemblies were rejected, the majority because of CLP. Less than two months later, Southern California Edison reported similar defects in pipe supplied for one of its nuclear facilities. Documentation provided with the pipe indicated that YWEC had performed the required ultrasonic examination, but the rejectable indications had not been identified. (Finding 122)

This determination resulted in a special investigation at YWEC by NRC inspectors. They determined that the apparent cause of the identified defects was inadequate control of welding parameters, including welding current, voltage and travel speed. The NRC Staff then issued Bulletin 70-03. (Exhibit XI to Staff Exhibit 7). This Bulletin required that licensees: (i) determine whether double-welded SA-312 pipe manufactured by YWEC had been incorporated or would be incorporated into safety-related piping systems, (ii) identify the system, location, pipe size and pressure/temperature parameters where the double-welded SA-312 pipe was or would be used, and (iii) develop a program for the volumetric examination of the longitudinal welds and provide suitable corrective action for non-conforming material. (Finding 123)

With this discovery of a potential problem with SA-312 pipe in a number of nuclear plants where it was involved, Bechtel determined that a detailed test program should be initiated to look into this generic problem. The test program was designed both to assess the ability of ultrasonic examination to detect CLP and to assess the effects of CLP on various mechanical properties of double-welded SA-312 pipe. The results and conclusions of Bechtel's investigation are contained in Bechtel's "Report on Investigation of Weld Imperfections in ASME SA-312 Double-Welded Austenitic Stainless Steel Pipe for Compliance with NRC I&E Bulletin 79-03" (Applicant Ex. 11). (Finding 124)

During this investigation, it was determined that the principal cause of CLP was the wide range of allowable welding parameters permitted by the YWEC qualified welding procedure. The significant welding parameters include arc voltage, amperage, travel speed, and weld head oscillation. Differences in the allowable settings for these parameters affect the depth of penetration of the upper and lower weld passes. Thus, as amperage is decreased to the minimum allowable setting under the YWEC qualified welding procedure, less heat is transmitted to the weld surface and the weld is relatively shallower. Similarly, an increase in arc travel speed will result in a shallower weld as will an increase in the weld head oscillation rate. The effect of any combination of settings depends on the thickness of pipe being welded. The range of parameters in the YWEC qualified welding procedure was approved for a thickness range of 1/16 inch to ¾ inch. Therefore, settings which would produce acceptable penetration for a 1/16 inch pipe might result in some CLP if used for a thicker walled pipe. An additional factor which can contribute to CLP is arc misalignment in which the upper and lower weld arcs are not aligned with the longitudinal seam and with each other. As a result, the weld penetrations may be sufficient, but the upper and lower weld beads will not meet in the center of the pipe thickness because the point of deepest penetration in the top weld is not aligned with the deepest penetration point in the lower weld. (Board Finding 125)

The Bechtel investigation concluded that the ASME Code-required ultrasonic examination cannot reliably detect CLP in double-welded SA-312 pipe. Bechtel's

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investigation included review of the ultrasonic testing techniques used by PPP and Ultralabs, and testing of four special test weldments fabricated by Bechtel with intentionally produced CLP, varying in amount from 35 percent to 60 percent. The Code-mandated ultrasonic examination was not able to detect the CLP in the four samples. Bechtel concluded that the two unfused base metal edges of the rolled plate are in such intimate contact that the ultrasonic sound waves are transmitted without interruption across the unfused area and are not reflected back to the ultrasonic transducer and displayed as an indication. Furthermore, the geometry of the CLP is such that even if the ultrasonic sound wave is reflected from a CLP condition, the majority of the energy would not be returned to the transducer and displayed as an indication. Accordingly, Bechtel concluded that the Code-specified ultrasonic examination will not reliably detect the presence of CLP in SA-312 piping. (Finding 126)

As part of its investigation, Bechtel determined the maximum amount of CLP in the SA-312 piping produced by YWEC. Bechtel examined 71 cross-sections of longitudinal welds in over 500 feet of double-welded SA-312 pipe supplied by YWEC to PPP. Of the specimens, 25 showed some degree of CLP. The greatest amount of CLP was 26 percent of the wall thickness of the pipe. There is ample evidence that the extent of CLP that may exist in Callaway SA-312 piping will be no greater than that examined in the Bechtel generic investigation. The Callaway pipe was fabricated by the same process, same machines, same personnel and within the same time period as the pipe supplied to PPP and examined by Bechtel. Furthermore, in intentionally producing test samples with greater than 26 percent CLP, Bechtel was required to use welding parameters outside the range of parameters used by YWEC. (Finding 127)

Bechtel performed tests to determine the effect of CLP on the mechanical properties of the pipe, but, in order to obtain data on welds which contained more than 26 percent CLP, the testing was done on a series of welded plates which were prepared so as to simulate welds in production pipe containing CLP. The same material type was used as the base material from which the SA-312 welded pipe was made. The intentionally produced CLP in the test plates ranged from 14 percent to 47 percent. The yield strength, ultimate tensile strength and elongation were measured, and it was shown that even with 25 percent CLP, SA-312 piping will meet all the ASME mechanical property requirements. Bechtel also had three hydrostatic burst tests performed. The first test was performed on a piece of YWEC pipe containing 15 percent centerline lack of penetration. The other two tests were performed on specially welded pipes with intentionally fabricated CLP of 40 percent and 55 percent. The pipes were plugged at each end and hydrostatically pressurized until fracture occurred. Normal hydrostatic test pressure for this size pipe and schedule is calculated to be 882 psi. The pipe with 55 percent CLP burst at the lowest pressure between 3000-3100 psi. (Finding 128)

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In addition to the Bechtel test program, two engineering analyses of SA-312 pipe with CLP were performed by Aptech Engineering Services, Inc. (Aptech). These included a fracture analysis study and a subsequent fatigue analysis. The results of these studies are contained in two Aptech reports introduced into evidence as Applicant Exhibits 12 and 13. The fracture analysis demonstrated that because of the very ductile nature of the stainless steel material used in SA-312 piping, the failure mode of the pipe would not be brittle fracture, but rather, a "leak-before-break" and ductile fracture mode. A limit load analysis was therefore used to calculate critical flaw sizes for a range of pipe stress conditions, pipe diameters and wall thicknesses. These calculations were conservatively confirmed by the actual results of the Bechtel burst tests. Using these results from the Aptech fracture analysis and assuming the highest hoop stress values in piping systems at Callaway containing double-welded SA-312 pipe, it was concluded that the CLP condition of the magnitude identified will not result in the initiation of a leak in such piping and that the possible presence of CLP is not a concern. Testimony at the hearing established that under the design conditions at Callaway, CLP on the order of 85 percent of wall thickness would have to exist before a pipe would leak. Even assuming initiation of a leak, the fracture analysis demonstrated that the critical CLP size (amount of CLP above which catastrophic failure will occur) is greater than the wall thickness of the pipe and thus catastrophic failure cannot occur. (Board Finding 129)

Aptech considered CLP more important from a fatigue point of view than from a fracture point of view because of the SA-312, Type 304 material's ductile behavior. Aptech's fatigue analysis was based on linear elastic fracture principles which link together flaw size, fatigue crack growth rate and applied stresses. The thrust of the analysis was to establish acceptance criteria based on worst-case assumptions. The result of the analysis was a series of flaw size versus life curves for a range of cyclic stresses so that the effect of any amount of CLP in any piping system could be assessed. When the results of Aptech's analysis were compared with actual conditions at Callaway, Aptech determined that the actual combined worst case parameters at Callaway are well below the assumed worst case conditions used during the fatigue analysis. (Finding 130)

In summary, the testing and analyses performed during this generic investigation of the CLP problems established that double-welded SA-312 piping, even with amounts of CLP substantially in excess of that found on production pipe, will function as intended with an adequate margin of safety. However, since it was also established that the ASME Code-required ultrasonic examination was ineffective in detecting the presence of CLP, Bechtel, in its report (Applicant Ex. 11), recommended a two-tiered response to the CLP problem in which the level of further examination for SA-312 piping would depend upon the hoop stresses in the system in which such piping was to be used. (Finding 131)

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In Bulletin 79-03A (Exhibit XII to Staff Exhibit 7), the NRC had indicated that 85 percent of ASME allowable code stresses was an appropriate screening mechanism for the use of SA-312 pipe. For systems subject to design stresses less than this level, the NRC found that a satisfactory design margin exists. This conclusion was supported by the Aptech fracture analysis, the Bechtel burst tests, the worst case of CLP actually found, and the level of CLP that can be expected to be detected by nondestructive examination. (Finding 132)

Double-welded SA-312 pipe is used in Callaway in the following systems: residual heat removal system, accumulator injection system, fuel pool cooling system, and the refueling water storage tank. Bechtel performed a series of calculations in responding to Bulletin 79-03A to determine the maximum hoop stresses in any piping systems containing double-welded SA-312 pipe. All of the affected piping systems had hoop stresses less than 85 percent of the ASME allowable.

Based on all the evidence, the Board finds that the designed use of SA-312 pipe at Callaway does not affect the safe operation of the plant.

Intervenor also raised questions about the safety of SA-403 fittings. SA-403 is a specification for wrought austenitic stainless steel pipe fittings, such as elbows, tees and reducers. SA-312 is frequently used as the raw material for such fittings; SA-403 fittings made from double-welded SA-312 pipe would contain CLP to the same extent as the straight-run pipe. (Board Finding 133)

The record reveals that no SA-403 fittings at Callaway made from double-welded SA-312 pipe are included in piping systems which have hoop stresses in excess of 85 percent of the stresses allowed by the ASME code. While fittings theoretically may be subject to different stresses than straight legs of piping, the nature of the systems using SA-403 fittings at Callaway is such that no separate analysis need be made. (Board Finding 134)

The NRC Staff has also concluded, based on the analytical and experimental effort described above, that failure of double-welded SA-312 piping due to the possible presence of CLP is highly improbable. Rutherford Testimony at 4-7.

Conclusion

The Board, therefore, finds substantial evidence in the record to conclude that the double-welded SA-312 piping installed at Callaway is structurally sound and can safely perform its design function. Even if it is hypothetically postulated that a system containing that piping became overpressurized to the point that failure occurred in the longitudinal seam weld, the failure would occur in the "leak-before-break" mode. Under no circumstances would a brittle fracture resulting in a catastrophic failure occur. Rather, a small leak would form in the longitudinal weld and stable propagation would occur only if the internal pressure were maintained or increased. This is unlikely to occur because of the instrumentation

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and control systems which would provide plant operators with appropriate information whenever conditions in a safety-related system exceed design conditions, so that appropriate action can be taken.

Contrary to the general allegation of Joint Intervenors, the incorporation into the safety-related systems at Callaway of SA-312 piping which may contain CLP cannot be considered a breakdown in the quality assurance/quality control programs in effect at Callaway. The CLP problem was generic in nature. While its cause may have been inadequate process control by the piping vendor, the means prescribed by the ASME Code to detect this imperfection were later determined to be inadequate.

Furthermore, the Intervenor's contention that the evaluation and acceptance of SA-312 piping with CLP were not performed according to the requirements of the ASME Code has also been shown to be without merit. Apart from the required destructive testing (hydrostatic, tension and flattening) which was performed, all welded pipe which may contain CLP underwent ultrasonic examination and met the ASME criteria for this examination. It was the examinatinn procedure itself which was found to be deficient. It has been established that the use of the efficiency factors in the ASME Code provides a conservative and satisfactory alternative to the ultrasonic examination. Accordingly, all SA-312 piping at Callaway complies with the ASME Code requirements. More significantly, however, the exhaustive investigation of the nature and extent of CLP in double-welded SA-312 pipe, including tensile tests and hydrostatic tests, along with the Aptech fracture and fatigue analyses that were performed, demonstrates that this type of pipe meets the design and service conditions specified in the ASME Code, and will safely and properly perform its intended function throughout the life of the Callaway plant.

F. II.B. Piping Subassembly Deficiencies

As indicated in the contention (Appendix II), Gulf & Western ("G&W") supplied preassembled piping formations for use at Callaway. Preassembled pipe formations are pre-designed, manufacturer-fabricated formations containing piping, fittings, valves, pumps, strainers, tanks and other similar equipment. The formations are discrete portions of piping systems that are completely assembled at the manufacturer's plant, delivered to the construction site and set in place as a unit, rather than being fabricated piece-by-piece at the construction site. The preassembled pipe formations serve the same purpose as all other piping systems in the plant, *i.e.*, to transfer fluids, and are designed and manufactured to minimize the amount of onsite craft labor, thereby realizing cost and schedule efficiencies. (Board Finding 135)

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In accordance with ASME Code requirements and Bechtel specifications, nondestructive examinations ("NDE") were performed on welds by G&W in order to detect any conditions not in conformance with ASME Code criteria. Liquid penetrant examinations were performed on all welds in all Class 3 formations, and radiographic examinations were performed on all welds in all Class 2 formations. Pursuant to Bechtel's procedures and specifications, in-process and final surveillance inspections were conducted by a Bechtel supplier quality representative at the G&W facility. The Bechtel representative was to have inspected numerous stages of the fabrication and post-fabrication review and testing of the formations. Upon delivery at Callaway, Daniel personnel performed a receipt inspection of the formations to check for proper paperwork and shipping damage, but did not normally inspect the quality of the welds in the formations. (Board Finding 136)

Potential deficiencies in the G&W formations were first detected by Daniel construction (welding) personnel at the site of Kansas Gas & Electric Company's Wolf Creek plant, which is another SNUPPS unit, in March 1979. The discrepancies were identified while the formation was being installed and were brought to the attention of a Daniel welding inspector who performed a visual examination of the formation and identified possible concerns with respect to both the quality of the formation welds and the quality of the radiographic examination techniques utilized by G&W. This information was passed along to Union Electric to determine if the potential deficiencies applied to Callaway. (Board Finding 137)

Applicant and Daniel personnel proceeded with an audit of G&W formations at Callaway, including a physical review of the formations and welds themselves and a review of G&W radiographs. The results of the audit indicated that there were noncompliances with Bechtel specifications and ASME requirements in the areas of both radiographic technique and weld discrepancies. A SNUPPS audit was then performed at the G&W facility. At the close of the audit, G&W conducted a 100 percent review of the weld radiographs. This review revealed radiographic technique deficiencies which prohibited a definitive determination as to the extent and significance of defects in the welds. (Board Finding 138)

In order to resolve the deficiencies, G&W agreed to review and radiograph all welds, and rework the welds as necessary. Three formations were returned for rework to G&W's manufacturing facility; most formations were to be reworked by G&W personnel at the Callaway site. G&W's performance in these endeavors was monitored by Union Electric, Daniel and Bechtel inspection personnel. The monitoring indicated continuing unsatisfactory performance by G&W. (Board Finding 139)

Following the discovery that G&W's rework effort was unacceptable, Applicant directed G&W to cease its rework efforts and turned the matter over to Daniel. Daniel performed visual inspections of the welds; when necessary, ground the weld surfaces in order to meet NDE requirements and visual acceptance standards; performed the required radiographic work; and rewelded welds that were found to

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be rejectable. All repaired welds were then given the appropriate nondestructive examination to ensure that the new welds met applicable acceptance criteria. The NRC Staff has reviewed the condition of the welds after Daniel finished its rework. The Staff found the quality of the repair work to be acceptable and the formations to be now adequate for use at the facility. (Board Finding 140)

Conclusion

The Board finds that the work performed by Daniel and the Staff's review of the pipe and welds in their present condition provide adequate assurance that the preassembled piping formations in their present condition will not affect the safe operation of the plant.

G. Quality Assurance Contention

Joint Intervenors established prior to hearing that their individual contentions were intended to be considered together as a whole to show that a breakdown of the Applicant's quality assurance program occurred during construction at Callaway. The evidence developed on the contentions showed that there were deficiencies in certain elements of the Applicant's QA/QC program. (Board Finding 141)

The Board has considered whether these deficiencies indicate a programmatic breakdown in Quality Assurance and concludes that they do not. We base this conclusion on the fact that (1) an extensive QA/QC program exists, (2) the deficiencies found were disclosed and remedied within the program itself, (3) the reactor building is safely built and (4) the Applicant displayed a generally affirmative commitment to quality in the discovery and resolution of the problems we considered. (Board Findings 142-146)

While we have expressed concern over some of the deficiencies found, we conclude that they are of limited extent and have no broader implications regarding the overall effectiveness of the Applicant's QA/QC program.

III. FINDINGS OF FACT

A. Contention I.A. Embedded Plates

1. Embedded steel plates, to support piping, electrical conduits, cable trays, HVAC components and structural steel framing are utilized in the Applicant's

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Callaway plant. (Applicant Embed Testimony, at 11, 28, 34; Staff Embed Testimony, at 2)[4]

2. The plates are attached to the surface of concrete walls by means of welded steel studs and steel anchor rods positioned in the concrete. (*Ibid.* at 2; Applicant Embed Testimony, at 10-11)

3. Two different types of plates are used in the plant: machine welded plates with studs that are welded by an automatic process, and manually welded plates with anchor rods that are welded manually. (Applicant Embed Testimony, at 12; Staff Embed Testimony, at 3)

4. The facility's architect/engineer, Bechtel Corporation, has responsibility for embed plate design, load capacities and quality surveillance during fabrication; the plate manufacturer, Cives Steel Company, has responsibility for quality inspection of all embed plates, and until July 1977, Daniel International, the facility's construction company, had responsibility for receipt inspection limited to quantities of plates received and shipping damage. In July of that year, Daniel was directed to broaden its duties to include inspecting all safety-related items received at the plant. (Applicant Embed Testimony, at 13-14; Schnell, Tr. 663-666)

5. On June 9, 1977, an NRC Inspector identified machine welded plates at the plant site which lacked full 360 degree weld (flash) material that had not been bend tested to 15 degrees as required by the applicable code. (Applicant Embed Testimony, at 14-15; Staff Embed Testimony, at 3)

6. Prior to June 9, 1977, there had been 255 machine welded plates and 225 manually welded plates installed in safety-related buildings to support safety-related loads in the facility. (Applicant Embed Testimony, at 28, 34; Staff Embed Testimony, at 3)

7. On June 9, 1977, the Daniel Corporation issued stop work orders on installing additional plates. A reinspection was authorized by the Applicant, of all machine welded and manually welded plates at the manufacturer's plant and at the Callaway site. (Schnell, Tr. 663; Meyers, Tr. 1227) An earlier reinspection (November-December 1976) provided no indication of defective materials being supplied by the Cives Company. (Intervenor Ex. 18, 19; Starr, Tr. 1451-1452)

8. The Cives Company and Daniel Corporation were separately directed to reinspect the welds on machine welded plates not installed and to bend test any studs to 15 degrees where a visual inspection showed the stud to have less than a 360 degree weld fillet. (Applicant Embed Testimony, at 18-19, 32-33; Staff Embed Testimony, at 4; Schnell, Tr. 661-662)

9. The Cives reinspection demonstrated a failure rate in machine welded studs of 0.08 percent or 66 studs in the 81,673 examined. The Daniel reinspection,

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[4] Applicant Embed Plate Testimony, ff. Tr. 501, hereafter cited as Applicant Embed Testimony. Staff Embed Plate Testimony, ff. Tr. 1261, hereafter cited as Staff Embed Testimony.

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which was conducted over a longer period of time, showed a failure of 0.11 percent or 106 studs out of 96,472 studs examined. (Applicant Embed Testimony, at 18-19; Staff Embed Testimony, at 4; Schnell, Tr. 1239-1240)

10. The 15 degree bend test was a more rigorous inspection requirement than that called for by the American Welding Society (AWS) Structural Welding Code, D1.1-75. (Applicant Embed Testimony, at 14-17)

11. The bend tests impose higher deformations and stresses into the studs and welds than the design loads applied to the plates. (Applicant Embed Testimony, at 19)

12. The rate of failure in the machine welded studs reinspected compares favorably with normal industry standards. (Applicant Embed Testimony, at 20; *also see* Staff Embed Testimony, at 4, and Applicant Ex. 4, Appendix A)

13. The reinspected plates were fabricated by the same company in the same time period using the same procedures as the plates which were installed in the facility before June 9, 1977. (Applicant Embed Testimony, at 20-21)

14. Using the failure rate data from the Cives reinspection, the Bechtel Corporation performed an engineering analysis that shows a probability of failure on the order of 1×10^{-9} for a machine welded plate installed prior to June 9, 1977. (Applicant Embed Testimony, at 21-26; Applicant Ex. 4, pp. 2-4)

15. Although the fabrication of a majority of the defective weld studs (59 percent or 39 of 66) on machine welded plates took place during a five-month period in 1976, the plates, on receipt at the plant, were intermingled with other plates and were generally interchangeable. (Thomas, Tr. 1218-19; Applicant Ex. 4, Appendix A)

16. The Staff did not rely on the Applicant's engineering analysis to base its conclusion that plates embedded prior to June 9, 1977 did not jeopardize the safety of the Callaway facility. (Gallagher, Tr. 1327-28)

17. The Staff requested the Applicant to test some machine welded embedded plates installed prior to June 7, 1977 as further evidence that the plates did not represent a safety problem. (Staff Embed Testimony, at 4)

18. Drs. Fisher and Slutter of Lehigh University performed tension tests on six machine welded embedded plates with loads in excess of design capacities without signs of plate failure. Plate selection was approved by the NRC. (Applicant Embed Testimony, at 27-28; Staff Embed Testimony at 4-5; Staff Ex. 6, p. 6)

19. The Staff witnessed the tests performed on the machine welded embeds. (Staff Testimony, Tr. 1418-19; Staff Ex. 6, Attachment E, p. 1)

20. The plates chosen for the embedded plate test were selected randomly on the basis of their accessibility and the feasibility of mounting a test rig on thenm (Applicant Embed Testimony, at 27)

21. The precise location within the Callaway plant of machine welded plates installed before June 9, 1977 and the loads they carry are known. Machine welded plates have been designed to provide load capacities with a minimum safety factor

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of at least 2.0 against the limit state of the plates or studs. These embeds do not support main floor beams and for critical piping systems are designed with a significant safety factor against failure. (Applicant Embed Testimony, at 28-31)

22. The requirements of the American Welding Society (AWS) *Structural Welding Code* D1.1-75 were applicable to welded studs and anchor rods on all embed plates in the construction of the Callaway facility. (Applicant Embed Testimony, at 13, 18)

23. The Cives Company was directed to reinspect all manually welded embeds not as yet installed at the Callaway site. The precise location of manual welded embeds and the loads they carry are known. (Applicant Embed Testimony, at 32-34)

24. Manual welding is required for anchor rods on embed plates as the rods are too large for automatic welding operation. (Applicant Embed Testimony, at 12)

25. Welding details, required by D1.1-75, are extremely difficult to accomplish by the manual welding process as a welder's orientation and access are hampered by the use of multiple studs. The pertinent sections of D1.1-75 were developed for linear welds and not for the kind of welds involved in the controversy here. (Applicant Embed Testimony, at 35-36; Applicant Ex. 4, p. 1)

26. Manually welded plates at Callaway are used to support structural steel framing members. (Applicant Embed Testimony, at 34)

27. Manually welded plates are designed for loads with a minimum safety factor of 2.0 against the yield limit state of the plate and tensile capacity of the anchor rods. (Applicant Embed Testimony, at 34; Meyers, Tr. 772-777)

28. The Bechtel Corporation was advised early in the reinspection effort that a number of welds did not meet the requirements of D1.1-75 on weld (leg) size, length of weld sizes, weld undercutting and weld profile (convexity). (Applicant Embed Testimony, at 32-35; Applicant Ex. 4, p. 1)

29. Based on "worst case" welding defects, the Bechtel Corporation performed an engineering analysis to evaluate the safety of manually welded plates installed prior to June 9, 1977. (Applicant Embed Testimony, at 37; Staff Ex. 6, p. 8)

30. Relying on reinspection information from Cives that the worst weld undersize was ⅛ inch, two legs of the weld were of unequal length, the welds exhibited excessive convexity, and the maximum undercut was 1/16th inch, Bechtel calculated reduced design capacities for every installed manually welded plate using the assumptions that all anchor rods were considered to have ⅛ inch undersized welds for a 360 degree perimeter of the anchor rod, both legs were considered to be undersized and all rods were to have a 1/16th undercut. (Applicant Embed Testimony, at 35-38; Meyers, Tr. 792; Applicant Ex. 4, p. 2)

31. In comparing the calculated reduced design capacity with the actual applied load on each embedded plate, Bechtel found the reduced capacity still exceeded the design load with the minimum safety factor against exceeding the

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plastic limit state of the plate of not less than 1.92. On four plates, however, the design load and the reduced design capacity were the same. (Applicant Embed Testimony, at 37-38; Intervenor Ex. 78)

32. The Bechtel engineering analysis was found acceptable by the Staff and the Applicant's expert consultants, Drs. Fisher and Slutter. (Applicant Embed Testimony, at 39; Staff Ex. 6, pp. 7-8)

33. The Bechtel engineering analysis was not based on final reinspection data from the Cives Company since the analysis was completed prior to the conclusion of Cives reinspection reports. (Intervenor Ex. 22; Applicant Ex. 4; Meyers, Tr 724. *Also see* Applicant Reply to Proposed Findings, No. 25.)

34. Subsequent to June 9, 1977, the Applicant directed the Daniel Corporation to inspect all safety-related plates at the Callaway site and those to be delivered by Cives in the future. (Applicant Embed Testimony, at 40-41; Applicant Ex. 6, p. 1)

35. After Bechtel's final report on August 1977 concluding that welded studs at Callaway were a completely acceptable product, the Daniel Corporation reported inspection results contradicting the assumptions used in Bechtel's engineering analysis. These assumptions were based on Cives reinspection information. (Applicant Embed Testimony, at 41; Applicant Ex. 6, pp. 1-2)

36. The Applicant and Bechtel claim to have had no knowledge of the results of the Daniel inspection, which began in June 1977, until November 7, 1977. (Holland, Tr. 1384; Applicant Ex. 7, p. 1)

37. However, the evidence shows Daniel reporting a large number of defects in manually welded plates to the Applicant in August 1977. (Intervenor Ex. 39) The testimony also reflects that Daniel and Cives personnel were aware of each other's inspection efforts. (Starr, Tr. 1359-60)

38. Subsequent to the receipt of the Daniel Corporation's inspection reports an investigation commenced, involving the Applicant, the Bechtel Corporation and Daniel, in an effort to resolve the differences between the Daniel and Cives data on manually welded plates. (Applicant Embed Testimony, at 41; Applicant Ex. 6, p. 2; Applicant Ex. 7)

39. After a series of meetings, the Bechtel Corporation stated its incapability of analyzing the Daniel inspection data on manually welded plates due to poor documentation, inconsistencies in reporting and possible errors in the data. (Applicant Embed Testimony, at 42; Applicant Ex. 7, pp. 1-4)

40. The reason assigned by the Applicant and Daniel for the lack of complete data information was that Daniel was only required to record sufficient information to enable the welded plate to be accepted or rejected, and not to provide a complete picture of the amount and extent of welding deficiencies. (Applicant Embed Testimony, at 43; Starr, Tr. 1357-58; Holland, Tr. 1380-84)

41. Bechtel completed its review by concluding its previous analysis supporting the acceptability of manually welded embeds was not contradicted by the

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Daniel's data. This decision was based on the following: first, that after eliminating inconsistent and incomplete data from the Daniel reports, only eight (8) embeds, which have since been repaired, out of 532 reported showed an average weld undersize greater than ⅛ inch; and second, that reinspections of 47 unrepaired but rejected embeds still at the site showed different results from the original Daniel inspections, with the average weld undersize not in excess of ⅛ inch. (Applicant Embed Testimony, at 43-44; Applicant Ex. 7, pp. 2-4; *also see* Applicant Ex. 6, pp. 3-5; Staff Ex. 6, p. 8)

42. The Applicant's review of Daniel's final effort at revising its inspection reports of manually welded embeds found that ten (10) embeds out of 364 reported had an average weld undersize exceeding ⅛ inch. This number was calculated on the assumption, however, that the undersize indicated extended around the circumference of the stud. (Applicant Ex. 6, p. 4)

43. In its submittal of its final report, Daniel's project manager stated that, since Daniel's inspectors only recorded the greatest, and not the average, undersize, any assumption that the maximum undersize condition went around the complete weld circumference would not represent a true image of the actual conditions. (Intervenor Ex. 14, p. 2)

44. Applicant's expert consultant, Dr. Fisher, testified that the manually welded embeds could safely carry their design loads even assuming that the worst weld deficiencies in the Daniel data extended around the circumference of the anchor rods. Dr. Fisher stated these weldments could have been 25 percent smaller and that existing welding codes were being changed to accommodate that additional margin. (Fisher, Tr. 742-45, 1136)

45. Based on its investigation and the difficulty of meeting code welding requirements for circular manual stud welding, Bechtel sought and received approval for exceptions to AWS D1-1 for welding between anchor rods and plates. The exceptions provided for smaller vertical leg welds, unequal legs, elimination of profile requirements and a 1/16 inch undercut for up to 10 percent of the weld length. The Staff endorsed these exceptions as minor in nature and as not affecting the capacity of the connection. (Applicant Embed Testimony, at 39-40; Applicant Ex. 4, Appendix C; Staff Embed Testimony, at 5)

46. Three years after manually welded embeds had been installed, the Staff (NRC) visually inspected plates substantially loaded with floor slab dead loads and reported no signs of distress. (Staff Ex. 6, p. 5)

47. On inspecting the rejected but unrepaired manually welded embeds at the Callaway site, the NRC Staff requested Applicant to perform load tests on selected welds, which appeared to have poor workmanship, in order to test their structural integrity. (Staff Ex. 6, p. 9; Applicant Embed Testimony, at 45)

48. Bend tests to 30 degrees on six anchor rods on six different plates and tension tests on an additional six anchor rods from six other plates were conducted at Lehigh University by Drs. Fisher and Slutter. The bend test plates were selected

by NRC Staff as well as the direction of the bend and the tension test plates were selected by the Applicant and reviewed by the Staff. Both tests were witnessed by the NRC. (Applicant Embed Testimony, at 45; Staff Ex. 6, p. 9 and Attachment E, p. 1; Applicant Ex. 5, p. 1)

49. The bend tests were conducted without any signs of cracking or weld failure and the tension tests, which tested the specimens to failure, demonstrated a minimum ultimate weld strength of 46,200 pounds for welds with a design load strength of 13,650 pounds. The remaining five welds tested showed an ultimate strength of 50,000 pounds or over. (Applicant Embed Testimony, at 46; Applicant Ex. 5, pp. 2-4; Staff Ex. 6, p. 9)

50. The Applicant and the NRC Staff both conclude that based on reinspection of plates fabricated in the same time frame, the engineering analysis of reduced load capacities due to weld deficiencies, and the actual load tests that were performed, the plates installed in the Callaway facility prior to June 9, 1977 were capable of safely supporting their design loads. (Applicant Embed Testimony, at 48; Staff Embed Testimony, at 5; Staff Ex. 6, pp. 9-10)

51. The NRC Regional Office which inspected and investigated events at the Callaway facility referred to NRC Headquarters — for review and a determination of adequacy — the Applicant's report of March 10, 1978, that approved the embeds installed prior to June 9, 1977 as acceptable in meeting design load requirements. The question of adequacy of embeds had been brought to Headquarters' attention at even an earlier date. After NRC Headquarters failed to act, the Regional Office again assumed responsibility for technical review of the report. (Intervenor Ex. 34, p. 4-5; Gallagher, Tr. 1298-1299)

B. Contention I.C.1. Honeycombing in the Reactor Building Base Mat

52. Concrete for the reactor building base mat was placed over a 62 hour period from April 6 to April 9, 1977. One hundred and ninety (190) construction crafts, engineering, quality control and supervisory personnel, were used in shifts to accomplish the concrete placement. NRC Staff inspectors were present and observed most of the operation (Applicant Base Mat Testimony, at 11-12; Staff Base Mat Testimony, at 3, 6-7);[5]

53. Honeycombing in the concrete ceiling of the tendon access gallery was found by construction personnel after the concrete had hardened. Honeycombing is a defective condition that consists of small air pockets in hardened concrete giving a "popcorn" appearance. (Applicant Base Mat Testimony, at 16, 17; Varela, Tr. 401, 402)

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[5] Applicant Base Mat Testimony, ff. Tr. 227 hereafter cited as Applicant Base Mat Testimony. Staff Testimony of A. Varela, ff. Tr. 396 hereafter cited as Staff Base Mat Testimony.

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54. All honeycombed areas were chipped to sound concrete, to determine the extent of the imperfections and to prepare the surface for repair. In all, 19 areas of honeycombing which required 24 separate excavations were found in close association with trumplates in the tendon access gallery ceiling. (Applicant Base Mat Testimony, at 15; Staff Base Mat Testimony, at 3)

55. The honeycombing was structurally significant because it called into question the performance of 14 of the 172 trumplates. (McFarland, Tr. 256; Applicant Base Mat Testimony, at 15)

56. The size of the honeycomb areas ranged from less than 1 square foot to a maximum of approximately 22 square feet. Most of the excavations were less than 4 square feet in area. The depth of the individual excavations averaged approximately 10 inches with a localized maximum of 17 inches. Lower layers of reinforcing bar embedded in the concrete were exposed. (Applicant Base Mat Testimony, at 15, 16; Staff Base Mat Testimony, at 3, 4; Staff Ex. 3, at 21, 22)

57. The cause of the honeycombing in the base mat was inadequate consolidation of the concrete during the placement operation. Consolidation is achieved by workmen using handheld vibrating tools which are inserted into the still wet concrete. The vibration causes the concrete to liquify temporarily and to flow around the steel reinforcing bar filling void spaces. (Applicant Base Mat Testimony, at 18; Staff Base Mat Testimony, at 6, 7)

58. Incomplete concrete consolidation was due to localized congestion of reinforcing steel, embedded plates and trumplates in the area above the tendon gallery roof. The area of the trumplates contained more than a normal complement of reinforcing steel. This congestion by steel embedments hampered the placement of the vibrating tools by the construction workers. (Applicant Base Mat Testimony, at 13-14, 29-30; Staff Base Mat Testimony, at 7-8; McFarland, Meyers, Tr. 357-359)

59. Daniel Corporation quality control personnel were present to assure the timely coordination and relocation of vibratory equipment and craft personnel during the pour. The NRC Staff inspector did not note any quality control deficiencies on the part of construction personnel during the pour. (Staff Base Mat Testimony, at 7-8)

60. Soniscope tests of interior concrete above the tendon trumplates showed that concrete was sound and that there were no hidden defects in the base mat above the gallery. (Applicant Base Mat Testimony, at 23-28)

61. Visible honeycombed areas were repaired by pumping a high strength grout into the voids to bond reinforcing steel. The repairs were equal in strength to the original concrete. (Applicant Base Mat Testimony, at 19-21, 28; Staff Base Mat Testimony, at 8; Varela, Tr. 406)

62. A concrete mixture called dry-pack was used to repair noncritical areas between trumplates which were shallow and structurally insignificant. The dry-

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pack repairs were done principally for cosmetic purposes. (Meyers, Tr. 375; Applicant Base Mat Testimony, at 21)

63. A stop work order was issued on dry-pack use because no specification required that the dry-pack be tested, and in fact, it was not being tested prior to use. Subsequent tests of the dry-pack material showed that it possessed compressive strength above the minimum required, and Bechtel determined that previously repaired areas could be used as is. (Applicant Base Mat Testimony, at 21)

64. There was a failure on the part of the Applicant to provide a testing specification for the dry-pack which proved harmless since the material was in fact structurally sound. The material was used for cosmetic repairs only.

65. After repair of the honeycombed area and the soniscopic testing, a post-tensioning operation was conducted by applying high tension to the tendons and anchoring them in the trumplates. During the post-tensioning operation, a force as high as 1,600,000 pounds was imposed on the area surrounding each trumplate. When the load was transferred to the tendon anchorage, the load on each trumplate was at least 1,400,000 pounds. These are the most severe loads that will ever be imposed on the trumplates. All tendons have been tensioned and anchored in trumplates with no evidence of distress in the concrete. (Applicant Base Mat Testimony, at 31)

66. NRC Staff inspected preparations for concrete placement including adequacy of reinforcing bar installation before concrete placement in the base mat and found no deficiencies. (Staff Base Mat Testimony, at 1; Staff Ex. 1)

67. Each phase of the concrete placement was planned in advance and discussed by the Applicant to assure that participants were aware of their responsibilities, the placement method, and the areas of congestion from reinforcing steel. A scaled model of the reinforcing steel was used during the planning sessions. (Applicant Base Mat Testimony, at 12; McFarland, Tr. 371)

68. Difficulty of concrete workability in areas of congestion had been anticipated in the planning for concrete placement. Engineers, inspectors, and laborers involved in concrete placement and consolidation were positioned within the steel assembly on the first layer of reinforcement to maintain close control of placing requirements and vibration of the concrete. (Applicant Base Mat Testimony, at 11-13: Staff Base Mat Testimony, at 7; McFarland, Tr. 334-339, 353-358)

69. Applicant's quality control inspectors, supervisory personnel and NRC inspectors were present during concrete placement. The Staff inspectors concluded that performance of the quality control personnel to maintain the quality of concrete was satisfactory. (Staff Base Mat Testimony, at 6-8)

70. Imperfections in concrete were reported by Daniel Corporation to Bechtel as required in a Nonconformance Report NCR 2-0653-C-A dated May 11, 1977. Bechtel rejected the report and requested more detail (Joint Intervenors Ex. 4). A second report filed on June 27, 1977, showed detailed sketches of the defective concrete and a repair plan which Bechtel approved. Union Electric notified NRC

by telephone of the concrete deficiency. (Applicant Base Mat Testimony, at 15; Applicant Ex. 1; Staff Base Mat Testimony, at 3, 4)

71. The Applicant conducted additional training of its personnel after the deficiencies were discovered to prevent their recurrence in future concrete placement operations. (Applicant Base Mat Testimony, at 21, 22; Staff Base Mat Testimony, at 8)

72. The concrete testing and repair were inspected and reviewed by NRC regional inspectors and were found to be satisfactory. (Staff Base Mat Testimony, at 5, 8; Staff Ex. 5)

73. The concrete imperfections in the base mat occurred in spite of precautions and not due to neglect of quality assurance.

74. The quality assurance procedures followed in this instance were consistent with the essential elements of a quality assurance program for inspection, identification of nonconformances, repairs of defects, and documentation and reporting. (Schnell Testimony, ff. Tr. 216, at 22-27)

75. Joint Intervenors claim that the concrete in the reactor base may be faulty because the tests performed in the tendon access gallery may be faulty, and might not demonstrate there is no honeycombing other than that initially discovered. (Joint Intervenors Proposed Finding 155)

76. Joint Intervenors' assertion that the soniscope method is faulty because it does not take account of the fact that sound waves may go around defects in concrete reflects a misinterpretation of the physical principles of the instrument. The deflection of sound waves around defects in concrete is the phenomenon which enables the detection of such defects. The added time required for sound to traverse a tortuous pathway relative to an unobstructed pathway is what is measured and what leads to the interpretation of reduced velocity and faulty concrete if it exists. (Pfeifer Tr. 306-307)

77. Joint Intervenors' argument that the velocity of sound in steel may account for the high sound velocity measured in tests of the base mat is misguided. Expert testimony shows that the interface between steel and concrete often results in a degraded signal or complete obstruction of the signal. While sound might well have a high velocity in steel, we need not take notice of that fact as urged by Joint Intervenors (Proposed Findings, p. 93) since it is beyond dispute that the base mat consists of concrete containing embedded steel. It is the existence of concrete-steel interfaces which might influence the velocity of sound; the sound signal may be halted by interfaces or simply go around the obstruction. (Pfeifer, Tr. 308-309) In either case the result could not be an apparent increase in sound velocity.

78. Joint Intervenors' discussion of the errors possible in aligning a cross hair on an oscilloscope which is necessary to measure the velocity of sound is without merit. (Proposed Findings, p. 94) The WJE report (Applicant Ex. 2, p. 19) lists a table showing average velocities of sound as transmitted through concrete and standard deviations and coefficients of variation for each average. Nonsystematic

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errors of measurement including instrument reading errors will be reflected in the calculated standard deviations and coefficients of variation. The coefficients of variation range from 1.0 to 2.1 percent. These errors are sufficiently small to assure that the measured sound velocities reliably exceed the threshold of concern (12,000 ft/sec) below which the integrity of concrete could be in doubt.

79. It was not possible to examine directly by nondestructive methods the remainder of the base mat which is not part of the tendon gallery. That portion of the base mat constitutes 81 percent of the entire structure while the tendon gallery constitutes only 19 percent. The exterior surfaces of the entire base mat including the top and vertical walls were inspected and found to be without defect. (McFarland, Tr. 381-382) Portions unavailable for inspection include the lower surface, *i.e.*, that resting on earth, and the interior concrete of the base mat. (Pfeifer, Tr. 246, 247) Since these areas could not be inspected directly, the Applicant relied on indirect evidence to establish their integrity.

80. The Applicant asserts that the random selection of soniscope test locations around the entire 360 degree circumference of the tunnel, the large number of readings taken at these locations, the fact that three different types of soniscope measurements were made yielding uniform results, the high velocities recorded, and the low statistical variation in the data all lead to a high degree of confidence that there is no occurrence of internal honeycombing in the base slab not only above the tendon gallery but also in the remainder of the base mat. (Applicant Base Mat Testimony, at 29-30)

81. Indirect evidence of interior integrity of base mat concrete comes from understanding the causes of surface honeycombing. The inadequate consolidation was due to the high congestion around the trumplates from embedded steel items, which hampered access and visibility of construction personnel when the concrete was being placed. (Applicant Base Mat Testimony, at 18) Although reinforcing bar occurs throughout the interior of the concrete base mat, it is less congested than at the top and bottom of the mat and it presents fewer difficulties of concrete workability. (Applicant Base Mat Testimony, at 13)

82. The soniscope investigation did not reveal a single instance of interior defects in the tendon gallery, and there is no other evidence that inadequate consolidation occurred in areas of low congestion from steel embedments. (Applicant Base Mat Testimony, at 27-28)

83. Honeycombing in concrete of the lower surface of the inaccessible portions of the base mat cannot be ruled out with certainty. However, the lower surface of the remainder of the base mat is less congested with steel reinforcing bar than in areas where honeycombing was found. It was therefore more accessible to vibration by construction crews than the tendon gallery. (Applicant Base Mat Testimony, at 29)

84. The magnitude of honeycombing that was found in the tendon access gallery would be of no safety significance if found elsewhere on other surfaces of

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the base mat. The concern for that in the tendon access gallery relates to the possibility of degrading the function of the tendon trumplates and not to the general concrete stress over the entire base mat. (Applicant Base Mat Testimony, at 30; Meyers, Tr. 240)

85. Joint Intervenors object that: (1) concrete placement reports were not submitted by all quality control inspectors after the base mat was poured and (2) the documentation of the existence of honeycombing in the reactor base mat was not submitted in a timely fashion since more than month passed after completion of concrete placement before a nonconformance report was written. (Joint Intervenors Proposed Findings, at 96, 97)

86. The Staff inspector who was present at the time of concrete placement subsequently cited the Applicant for an infraction because each of the Applicant's quality control inspectors did not submit individual concrete placement reports. A single concrete placement report was submitted which was signed by the inspector who was present at the termination of the pour. The concrete placement report did not include the attributes of concrete placement which were to be verified by the quality control inspector. (Staff Ex. 3, at 22, 23)

87. The Applicant and Staff disagreed on the required number of concrete placement reports. The Applicant believed a single concrete placement report signed at the termination of the pour was adequate. The Staff's view is that a concrete placement report was required from each inspector present at the time of the pour. (McFarland, Tr. 330-331)

88. The Applicant undertook to remedy the deficiency by having each inspector present during the time of concrete placement sign a concrete placement report. Each concrete placement report was similar in information content and appearance and was signed by the individual inspectors during a period covering July and the first part of August of 1977. (McFarland, Tr. 328; Joint Intervenors Ex. 5) In all but one case, the concrete placement reports were signed without individualized comment by the inspector. (Each report referenced the same quality control procedure (QCP 109)). In the Applicant's view the signatures and the absence of comment on the concrete placement reports provides assurance that the individual inspector observed no deficiencies during the pour. It could not be ascertained directly from the reports, however, what activities the signature of each inspector was verifying that he had witnessed. (McFarland, Tr. 322-324; 351)

89. NRC Staff interviewed some of the inspectors after receiving the concrete placement reports and verified that they had observed no deficiencies during concrete placement. (McFarland, Tr. 329; Staff Ex. 4, p. 4)

90. The Board concurs with Joint Intervenors that the procedure followed here was defective. We critize the documentation procedure but do not find evidence that the inspectors failed to perform their duties at the time the concrete was

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actually placed. Specifically, we find that the placement reports signed without comment some three months after the event took place to be essentially worthless.

91. The Board is unable to determine from the belated reports whether they were signed by the inspectors in a perfunctory manner as simply another burden of paperwork or whether the signatures have genuine meaning. While some interviews were done by the Staff inspector, the interviews were not documented. Thus, no genuinely useful written record exists to document the observations of inspectors during the placement of concrete in the base mat.

92. The Board finds no deficiency with regard to the timing of the nonconformance report. In the approximate month between completion of the base mat pour and the filing of the first nonconformance report, the concrete was left to harden, the concrete forms were then removed, inspections were performed and honeycombed areas were chipped to sound concrete. In light of the actions that had to be taken, the elapsed time of one month from the termination of the pour appears reasonable. (McFarland, Tr. 255, 256)

93. The quality assurance procedures employed in the construction of the base mat worked properly in that precautions were taken to prevent deficiencies, deficiencies that occurred in spite of the precautions were found promptly, appropriate reports and tests were made except as noted above, and repairs were made which restored the defective areas to original design specifications.

C. Contention I.C.2. Honeycombing in the Reactor Building Dome

94. The top of the reactor building presented an unusual and difficult problem of concrete placement which resulted from angles of placement ranging from 45 degrees to nearly horizontal at the top of the dome and also due to the placement being accomplished without the use of an outside concrete form. (Applicant Reactor Dome Testimony, at 9, 10; Tye, Tr. 2012, 2036)[6]

95. Freshly placed concrete in this region of the dome was vibrated to produce consolidation. Vibration near the outside face of the concrete caused subsidence in a downward direction. Concrete had to be replaced from lower to upper levels while the vibration process continued. (Applicant Reactor Dome Testimony, at 10)

96. After the concrete hardened, four areas of honeycombing were found on the outer surface of the dome. The honeycombed areas were chipped to sound concrete. The chipping process revealed air gaps of approximately ¼ to ½ inch in diameter between the horizontal reinforcing steel and the concrete approximately 4

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[6] Applicant Reactor Dome Testimony, ff. Tr. 2010 hereafter cited as Applicant Reactor Dome Testimony. Staff Testimony, ff. Tr. 2067 hereafter cited as Staff Ma Reactor Dome Testimony or Staff Hawkins Reactor Dome Testimony.

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to 6 inches from the outer surface of the dome. Chipping was completed November 6, 1980. (Applicant Reactor Dome Testimony, at 11, 12; Board Ex. 6)

97 The gaps were caused by the downward movement or subsidence of the concrete away from the reinforcing bars when it was being placed. (Applicant Reactor Dome Testimony, at 11)

98. The Daniel Corporation filed a nonconformance report to Bechtel Corporation on November 10, 1980. Bechtel and Union Electric personnel questioned Daniel whether more investigation was needed since additional imperfections might be present. Union Electric notified the NRC Staff on December 5, 1980 of a potentially significant deficiency. (Applicant Reactor Dome Testimony, at 12, 13)

99. On December 13, 1980, three additional areas of honeycombing were discovered in the dome area following removal of grease vent blockouts at the request of NRC Staff. At that point there were seven known areas of concrete imperfections in the dome. Repairs of these areas involved chipping and shaping each cavity to receive replacement concrete which was of the same class and mix as originally used. (Applicant Reactor Dome Testimony, at 13-15; Staff Ex. 8, at 4)

100. A number of nondestructive and destructive examinations of the dome were done including nuclear densometer testing, boroscopic examination, microseismic (pulse echo) examination, selective excavation and engineering analysis. (Applicant Dome Testimony, at 18) The nuclear densometer and boroscope examinations did not reveal further evidence of unsound concrete. (Applicant Reactor Dome Testimony, at 18-19; Applicant Ex. 19, at 11-15)

101. The pulse-echo technique was used at 1,671 locations as a means of searching for imperfections throughout the three foot thickness of the dome. (Applicant Reactor Dome Testimony, at 19-20; Goddard, Tr. 2056-59) The pulse-echo method has been used extensively for similar applications and is reliable and accurate. (Staff Hawkins Reactor Dome Testimony, at 4; Hawkins, Tr. 2075-76 and 2078)

102. The results of the pulse-echo testing showed that 28 of 1,671 tests or 1.68 percent were of possible structural significance but none of the areas tested showed a sufficient number of such readings to classify the area as structurally defective. (Applicant Reactor Dome Testimony, at 21-22; Applicant Ex. 19, at 22-24)

103. The Applicant excavated concrete at six test points which had shown defects by the pulse-echo method, and excavations confirm that a correlation exists between the pulse-echo readings and the actual imperfections. (Applicant Reactor Dome Testimony, at 22-23; Applicant Ex. 19, at 24-26)

104. Staff review of test results indicated that more testing was needed. Applicant and Staff then concluded after additional testing that the extent of imperfections was clearly identified. (Applicant Ex. 19, at 35-41; Applicant Reactor Dome Testimony, at 24-26; Staff Hawkins Reactor Dome Testimony, at 4; Hawkins, Tr. 2073)

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105. An engineering analysis showed that the structural integrity of the dome would not be jeopardized when subjected to all design load conditions including postulated accidents even if 50 percent of the mechanical bond were completely lost around the entire perimeter of the bars in the outside layer of reinforcing steel. (Applicant Reactor Dome Testimony, at 26)

106. The Staff performed an independent engineering analysis and concluded that the dome is adequate as built. This is based on findings that the original design contained more than enough extra steel reinforcement to compensate for the small deficiencies found in the concrete. (Staff Ma Reactor Dome Testimony, at 3; Ma Tr. 2077-78)

107. The strength of the concrete in the dome exceeds the design strength by a considerable margin and the overall quality of the concrete is not in question. (Applicant Reactor Dome Testimony, at 11, 12; Staff Ma Reactor Dome Testimony, at 6)

108. Imperfections in the reactor dome were discovered through routine inspections. The imperfections were reported to Bechtel, the architect/engineer, who in turn initiated further examinations. Reports were made to NRC. The extent of defects was fully investigated and repairs were properly made. The Applicant's quality assurance program functioned properly in this instance. (Applicant Reactor Dome Testimony, at 27; Staff Hawkins Reactor Dome Testimony, at 5)

D. Contention II.A.I. SA-358 Piping

109. SA-358 is an ASME material specification for welded stainless steel pipe. (Stuchfield, Tr. 1456, 1545) This material specification provides a series of limits and permissible variations for several dimensional requirements for the finished pipe. (Applicant SA-358 Piping Testimony, at 5)[7]

110. Daniel employees observed a spool piece irregularity and after an ultrasonic test (UT) confirmed a thin wall area, a nonconformance report (NCR) was issued. (Applicant SA-358 Piping Testimony, at 5, 6)

111. NRC Staff and Applicant personnel conducted measurements of the ovality of the pipe, determined that the actual maximum ovality is 0.86 percent, and therefore was within the one percent difference between major and minor outside diameters permitted by material specification SA-358. (Applicant SA-358 Piping Testimony, at 5, 8; Staff Foster SA-358 Piping Testimony, at 2; Staff Beeman SA-358 Piping Testimony, at 2, 3)

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[7] Applicant SA-358 Piping Testimony, ff. 1537, hereafter cited as Applicant SA-358 Piping Testimony. Staff SA-358 Testimony, ff. Tr. 1681 hereafter cited as Staff Foster, Beeman or Key SA-358 Piping Testimony.

112. The measured minimum wall thickness of the pipe in question was 0.814 inch. (Applicant SA-358 Piping Testimony, at 8, 9; Staff Foster SA-358 Piping Testimony, at 2, 3) Bechtel and the NRC Staff performed independent calculations and concluded a minimum wall thickness of 0.814 inch is acceptable. (Staff Beeman SA-358 Piping Testimony, at 3; Staff Ex. 7, at 8)

113. Daniel measured weld reinforcement on the inside of the SA-358 pipe with a reinforcement height of 3/16 inch and documented it in a nonconformance report. Bechtel initially erroneously dispositioned this NCR. (Applicant SA-358 Piping Testimony, at 9, 10) Daniel elected to rework the item to bring the weld into compliance with the ASME code by localized grinding. (*Id.*, at 16-17; Foster, Key, Tr. 1706, 1707; Laux, Tr. 1625-1627)

114. The Daniel NCR identified overlap in the same area as the excess weld reinforcement. Bechtel advised that overlap is not listed in the ASME code as a rejectable condition for radiography, as overlap does not affect the volumetric quality of the weld. (Applicant SA-358 Piping Testimony, at 11, 12) The overlap was reworked by grinding. (*Id.*, at 16; Foster, Key, Tr. 1706, 1707)

115. Joint Intervenors assert that the overlap condition could have been caused by a "melt-through" or "drop-through" — *i.e.*, the first weld pass from the outside of the pipe melting through the pass made from the inside. (Applicant SA-358 Piping Testimony, at 12; Staff Key SA-358 Piping Testimony, at 2)

116. The overlap indicates that drop through could not have occurred. (Beeman, Tr. 1752) Melt-through would have resulted in a surface condition on the inside of the pipe which would be readily detected. (Applicant SA-358 Piping Testimony, at 13; Stuchfield, Tr. 1563-1564, 1642-1643) If melt-through had occurred, surface porosity would have quickly occurred and no such porosity was detected. (Applicant SA-358 Piping Testimony, at 13, 14) No radiographic reviews of the area by Union Electric and Daniel personnel resulted in this weld being declared unacceptable. (*Id.*, at 15)

117. NRC Staff witnessed radiograph tests (Staff Foster SA-358 Piping Testimony, at 3; Applicant SA-358 Piping Testimony, at 17), inspected the SA-358 pipe, reviewed the pipe's documentation, inspected the radiographs of the weld seam taken after the rework and concluded the weld to be free of defects and within ASME code acceptance criteria. (Staff Foster SA-358 Piping Testimony, at 3; Applicant SA-358 Piping Testimony, at 17; Staff Key SA-358 Piping Testimony, at 1, 2 Key, Tr. 1751. *See also*, Beeman, Tr. 1751-1752)

118. Two fissures in the questionable weld were reported in NRC IE Inspection Report No. 50-483/81-04. (Staff Ex. 7) Applicant's and Staff's witnesses concurred that there is no evidence of fissures. (Applicant SA-358 Piping Testimony at 15, 16; Key, Tr. 1710, 1750; Beeman, Tr. 1712-1714; Stuchfield, Tr. 1648)

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E. Contention II.A.2. SA-312 Piping

119. SA-312 is an ASME material specification for both seamless and welded stainless steel pipe. (Applicant's SA-312 Piping Testimony, at 19 and Figure 1[*]; Stuchfield Tr. 1794-1795, 1809-1810)

120. Those safety-related systems at the Callaway Plant which contain double-welded SA-312 pipe are designated as ASME Class 2 or Class 3. For use in Class 2 systems, ASME Section III requires that welded pipe be nondestructively examined, usually by the ultrasonic method. (Applicant SA-312 Piping Testimony, at 16-17; Hurd, Tr. 1782-1788; Stuchfield, Tr. 1824-1825)

121. Centerline lack-of-penetration (CLP) occurs in double-welded SA-312 pipe when complete through-wall fusion does not occur between the inside and outside welds during welding of the longitudinal seam. (Applicant SA-312 Piping Testimony, at 17 and Figure 1; Staff Rutherford SA-312 Piping Testimony, at 3)

122. The CLP problem in SA-312 piping was first identified in the fall of 1978. Imperfections, principally for lack of center line of penetration, were found in the longitudinal welds of double-welded SA-312 pipe being fabricated into piping subassemblies for the Palo Verde Nuclear Generating Station. A similar rejection was reported by Pullman Power Products (PPP) on pipe purchased from Youngstown Welding and Engineering Company (YWEC) for the San Onofre 2 and 3 Nuclear Generating Stations. The Palo Verde and San Onofre owners reported these findings to the NRC. (Applicant SA-312 Piping Testimony, at 17, 18; Staff Rutherford SA-312 Piping Testimony, at 1-2; *see* Applicant Ex. 11, at 1)

123. The NRC Office of Inspection and Enforcement issued I&E Bulletin 79-03 in March, 1979, requiring all operating license and construction permit holders to determine if similar pipe had been or would be incorporated into safety-related piping systems. In response to this Bulletin, Applicant determined that pipe manufactured by YWEC had been used in piping subassemblies fabricated for the Callaway Plant. A complete schedule of the location of all YWEC-supplied pipe was provided to the NRC and a program for ultrasonic examination of longitudinal welds was established as required by the Bulletin. (Applicant Ex. 10; Applicant SA-312 Piping Testimony, at 19)

124. A generic investigation into the CLP problem was undertaken by Bechtel.

125. This investigation determined that the principal cause of CLP was the wide range of allowable welding parameters permitted by the YWEC qualified welding procedure. (Stuchfield, Tr. 1799-1804; Applicant SA-312 Piping Testimony, at 20-21; Intervenor Ex. 61; Egan, Tr. 1807)

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[*] Applicant SA-312 Piping Testimony, ff. 1773, hereafter cited as Applicant SA-312 Piping Testimony. Staff Testimony, ff: Tr. 1898, hereafter cited as Staff Rutherford SA-312 Piping Testimony.

126. The Bechtel investigation concluded that the ASME Code-required ultrasonic examination cannot reliably detect CLP in double-welded SA-312 pipe. (Applicant SA-312 Piping Testimony, at 23; Stuchfield, Tr. 1797, 1827, 1828; *see also* Applicant Ex. 11, at 2, 3, 7, 8)

127. Bechtel determined the maximum amount of CLP in the SA-312 piping produced by YWEC to be 26 percent. (Applicant SA-312 Piping Testimony, at 24-25; Stuchfield, Egan, Tr. 1811-1814; *see also*, Staff Rutherford SA-312 Piping Testimony, at 4; Applicant Ex. 11, at 2-3)

128. Tensile and hydrostatic (burst) tests established that with 26 percent CLP, SA-312 piping will meet all of the ASME mechanical property requirements and that even with 47 percent CLP, yield strength requirements are met. (Applicant SA-312 Piping Testimony, at 25-26; Applicant Ex. 11, at 2, 3, 7) Tests were performed on three SA-312 pipe sections with known CLP of 15 percent, 40 percent and 55 percent. The lowest burst pressure recorded was for the pipe with 55 percent CLP which burst at 3000 psi, far in excess of the ASME Code-required hydrostatic test pressure of 882 psi for the same size and schedule pipe. (Applicant SA-312 Piping Testimony, at 27-28; Staff Rutherford SA-312 Piping Testimony, at 6; Applicant Ex. 11, at 2, 3, 14-19; *see also*, Rutherford, Tr. 1906)

129. Two engineering analyses of SA-312 pipe with CLP were also performed by Aptech Engineering Services, Inc. (Aptech). The first, a fracture analysis, demonstrated that because of the very ductile nature of the stainless steel material used in SA-312 piping, the failure mode of the pipe would not be brittle fracture, but rather, a "leak-before-break" and ductile fracture mode. (Applicant SA-312 Piping Testimony, at 28-30; Staff Rutherford SA-312 Piping Testimony, at 5; Applicant Ex. 12, at p. iii) A load limit analysis showed that the possible presence of CLP is not a concern. (Applicant SA-312 Piping Testimony, at 30-32; Staff Rutherford SA-312 Piping Testimony, at 5, 6; Egan, Tr. 1881; *see* Applicant Ex. 12, at pp. 7-5 to 7-7, 10-1, 10-2)

130. The second fatigue analysis determined that fatigue failure as a result of the possible presence of CLP was not a concern. (Applicant SA-312 Piping Testimony, at 33, 34; *see* Applicant Ex. 13, at 9-1)

131. The testing and analyses performed during this generic investigation of the CLP problems established that double-welded SA-312 piping, even with amounts of CLP substantially in excess of that found in production pipe, will function as intended with an adequate margin of safety. (Applicant SA-312 Piping Testimony, at 34-35)

132. The NRC adopted a Bechtel recommendation in issuing I&E Bulletin 79-03A which made several changes to the directives originally contained in I&E Bulletin 79-03. Inasmuch as all piping systems containing double-welded SA-312 pipe at Callaway are subject to maximum hoop stresses less than 85 percent of the ASME Code-allowable stresses, no further action was required by Applicant.

(Applicant SA-312 Piping Testimony, at 38; Staff Rutherford SA-312 Piping Testimony, at 2; Applicant Ex. 14; Applicant Ex. 11, at 4)

133. Joint Intervenors questioned the use in Callaway piping systems of SA-403 fittings which may contain CLP. SA-403 is a specification for wrought stainless steel pipe fittings, such as elbows, tees and reducers. The double-welded SA-312 pipe used to manufacture fittings is no different than the double-welded SA-312 pipe used for straight-run pipe, and could contain CLP to the same extent as straight-run pipe. (Applicant SA-312 Piping Testimony, at 38, 39; *see also*, Applicant Ex. 16; Joint Intervenors Ex. 64)

134. No SA-403 fittings are used in Callaway piping systems which have hoop stresses greater than 85 percent of the ASME Code-allowable stresses. (Applicant SA-312 Piping Testimony at 39; Stuchfield, Tr. 1777; Hurd, Tr. 1790-1793)

F. Contention II.B. Piping Subassembly Deficiencies

135. Preassembled pipe formations are pre-designed, manufacturer-fabricated formations containing piping, fittings, valves, pumps, strainers, tanks and other similar equipment. (Applicant G&W Testimony, at 8-9)[9]

136. Nondestructive examinations ("NDE") were performed on welds by G&W in order to detect any conditions not in conformance with ASME Code criteria. In-process and final surveillance inspections were conducted by Bechtel, and Daniel personnel performed receipt inspections. (Applicant G&W Testimony, at 10-11; Staff Hansen Testimony, at 4)

137. In March, 1979, a Daniel construction worker informed a Daniel welding inspector at the Wolf Creek site of potential deficiencies in a preassembled piping formation supplied by Gulf & Western. (Applicant G&W Testimony, at 11; Powers, Laux, Tr. 1929, 1930; *see also*, Intervenor Ex. 69)

138. Applicant's Construction QA group conducted an extensive audit of the G&W formations at the Callaway site which determined that the G&W formations exhibited noncompliances to the Bechtel specification and to ASME Code requirements in the areas of both radiographic technique and visible weld discrepancies. SNUPPS QA Committee audit reviewed G&W's manufacturing and inspection activities. G&W agreed to conduct a 100 percent review of the weld radiographs. (Applicant G&W Testimony, at 12, 13; Staff Hansen Testimony, at 2)

139. G&W was required to rework all safety-related formations and onsite rework was monitored by Union Electric, Daniel and Bechtel. Radiographic technique deficiencies and weld deficiencies continued to be encountered and

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[9] Applicant's Gulf and Western Testimony (Piping Subassembly Deficiencies), ff. Tr. 1920, hereafter cited as Applicant G&W Testimony. Staff Testimony, ff. 1979, hereafter cited as Staff Hansen Testimony.

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G&W was directed to cease its onsite rework efforts. (Applicant G&W Testimony, at 13-16; Staff Hansen Testimony, at 3; Intervenor Ex. 69, Final Report, at 1-2)

140. Daniel assumed responsibility for onsite rework and all repairs have been completed and all welds now meet the applicable criteria. (Applicant G&W Testimony, at 16, 17; Staff Hansen Testimony, at 3; Key Testimony, ff. Tr. 1979, at 2)

G. Contention on the Quality Assurance Program

141. The Board has found deficiencies in certain elements of the Applicant's quality assurance or quality control program. We tabulate our findings below for each contention.

Embedded Plates

1. Bechtel evaluation of weld reinspection data without written documentation was inadequate.
2. There was a lack of awareness on the part of Applicant and Bechtel of Daniel weld inspection data for a period of months, leading to doubts of careful monitoring of construction at Callaway.
3. There was inconsistent reporting of weld deficiencies by Daniel, indicating supervisory weakness.
4. Serious questions were raised as to the quality of welded embeds fabricated by Cives Company.
5. And finally, there was an elapsed time of three years from discovery to final resolution of the embed problem on the part of NRC headquarters officials.

Concrete in the Reactor Base Mat

1. There was inadequate resolution of the inspection documentation problem related to concrete placement reports for the reactor base mat.
2. The use of untested dry-pack concrete for repairs was questionable. (In this instance the failure proved harmless to structual integrity and we consider it here only as incremental evidence pertinent to the effectiveness of the quality assurance program)

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Concrete in the Reactor Dome

No defects relevant to the adequacy of the Applicant's quality assurance program were found.

SA-358 Piping

No defects relevant to the adequacy of the Applicant's quality assurance program were found.

SA-312 Piping

No defects relevant to the adequacy of the Applicant's quality assurance program were found.

Piping Subassembly Deficiencies

No defects relevant to the adequacy of the Applicant's quality assurance program were found.

142. In judging the adequacy of the Applicant's quality assurance program we compare actual performance against the functional standards stated in the testimony of Mr. Schnell who is Vice President Nuclear for Union Electric. (Schnell Testimony, ff. Tr. 216, at 23-27)

143. It is uncontroverted that the Applicant has in place a comprehensive QA/QC program at Callaway. (Schnell Testimony, ff. Tr. 261, at 35)

144. There is no evidence from the contentions in this case that all or a substantial part of the overall QA program failed to function during construction at Callaway. The program had effective overall control of construction quality and it coped effectively to resolve problems that were identified in the contentions in this case. However, as noted in our comments on the individual contentions, there were several significant quality control problems.

145. The ultimate resolution of each problem identified in this case assures, however, that there are no safety concerns in the Callaway plant relative to those contentions tried in this case.

146. The deficiencies in quality assurance noted in this decision do not collectively show a pattern of programatic breakdown in the QA program. While there is no cause for complacency regarding the deficiencies noted, particularly those related to the embedded plate problem, we conclude that the deficiencies are isolated problems having no broader implication for the overall effectiveness of the QA program.

IV. CONCLUSIONS OF LAW

The Board has considered all the evidence submitted by the parties and the entire record of this proceeding consisting of the Commission's Notice of Hearing, the pleadings filed by the parties, the transcripts of the hearing and the exhibits received into evidence. All issues, contentions, and proposed findings presented by the parties, but not addressed in this decision, have been found to be without merit or unnecessary to our decision. The findings of fact presented above are supported by reliable, probative and substantial evidence in the record.

The Board has not yet heard evidence with respect to, and this Partial Initial Decision does not address, the emergency planning contentions raised by Intervenor Reed. Based upon a review of the entire record in this proceeding and the foregoing findings of fact, the Board enters the following conclusions of law.

This is a contested proceeding on an application for an operating license for a utilization facility, and the Board has made findings of fact and conclusions of law on the matters put into controversy by Joint Intervenors with respect to construction defects at Callaway and Applicant's quality assurance program. Contentions in regard to radioactive releases have been withdrawn. The matters put into controversy by Intervenor Reed are still pending before the Board. The Board has not determined that a serious safety, environmental, or common defense and security matter exists. *See* 10 CFR §2.760a. Other findings required to be made prior to the issuance of an operating license, except for the remaining matters in controversy, are to be made by the Director of Nuclear Reactor Regulation. *See Id.* and 10 CFR §50.57.

Having decided all matters in controversy raised by Joint Intervenors, in favor of authorizing operation of the facility, the Board concludes that as to the matters decided herein, the Director of Nuclear Reactor Regulation would be authorized, upon making the requisite findings with respect to matters not resolved in this Partial Initial Decision, and subject to the Board's resolution of outstanding matters in controversy, to issue to Applicant a license to operate Callaway Plant, Unit 1. Such authorization is not now granted by the Board, however, and will not be granted until the Board resolves the outstanding matters in controversy or issues a further order to the contrary.

V. ORDER

WHEREFORE, IT IS ORDERED, in accordance with 10 CFR §§2.760(a) and 2.762, that this Partial Initial Decision shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, unless exceptions are taken in accordance with Section 2.762 or the Commission directs that the record be certified to it for final decision. Any exceptions to this Partial Initial Decision or designated portions thereof must be filed within ten (10) days after

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service of the decision. A brief in support of the exceptions must be filed within thirty (30) days thereafter (forty (40) days in the case of the NRC Staff). Within thirty (30) days of the filing and service of the brief of the appellant (forty (40) days in the case of the NRC Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

Glenn O. Bright
ADMINISTRATIVE JUDGE

Dr. Jerry R. Kline
ADMINISTRATIVE JUDGE

James P. Gleason, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 13th day of December, 1982.

APPENDIX I

WITNESS LIST

Contention	Witness	Transcript
Embedded Plates		
Applicant	Donald F. Schnell V.P., Union Electric Co. Bernard L. Meyers Project Mgr., Snupps Bechtel Power Corp.	501

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	Eugene W. Thomas Supervisor, Snupps Bechtel Power Corp. Kirit Parikh Civil Eng. Supervisor Bechtel Power Corp. John W. Fisher Professor, Lehigh Univ. Civil Engineering Roger G. Slutter Professor, Lehigh Univ. Civil Engineering	
Staff	Eugene W. Gallagher Civil Engineer, Office of Inspection and Enforcement Nuclear Regulatory Commission	1261
Licensing Board	Harold J. Starr Project Manager Daniel International Corp. John A. Holland Project Piping Engineer Daniel International Corp.	1342

Honeycombing-Base Mat

Applicant	Bernard L. Meyers Thomas H. McFarland Construction Supervisor Union Electric Company Donald W. Pfeifer Project Manager Wiss, Janney, Elstner & Associates	227
Staff	Anthony A. Varela Civil Engineer Nuclear Regulatory Commission	392

Honeycombing-Reactor Dome

Applicant	Eugene W. Thomas	2010

	Guy H. Goddard Deputy Group Supervisor Bechtel Power Corp.	
	B. Christopher Tye Process Consultant Bechtel Power Corp.	
	Richard A. Muenow Pres., Muenow & Associates Consulting Engineers	
SA-358 Piping		
Applicant	Michael F. Stuchfield Area Office Manager Bechtel Power Corp.	1537
	Joseph V. Laux Supervising Engineer Bechtel Power Corp.	
Staff	Gordon Beeman Research Engineer Battelle Memorial Institute	1681
	James Foster Investigator Nuclear Regulatory Commission	
	William Key Inspector Nuclear Regulatory Commission	
SA-312 Piping		
Applicant	Bernard L. Meyers	1773
	Michael F. Stuchfield	
	John D. Hurd Snupps Group Supervisor Bechtel Power Corp.	
	Geoffrey R. Egan Technical Director Aptech Engineering Services	
Staff	William R. Rutherford Senior Mechanical Engineer Formerly with NRC and now a Consultant	1897

Piping Subassembly Deficiencies

Applicant	Joseph V. Laux Bernard L. Meyers Michael F. Stuchfield Robert L. Powers Superintendent, Site Q.A. Union Electric Company Harry J. Porter Quality Manager, Snupps Project Bechtel Power Corp.	1920
Staff	William Key William A. Hansen Senior Resident Inspector Nuclear Regulatory Commission	1977

Quality Assurance

Applicant	Donald F. Schnell	216

APPENDIX II

INTERVENORS' CONTENTIONS FAILURE OF THE QUALITY ASSURANCE PROGRAM

Surveillance and inspection functions of Applicant Union Electric Company, and others, including Bechtel Power Corp. (lead architect/engineer), Daniel International Corp. (construction contractor) and Code Authorized Nuclear Inspectors, failed to ensure the quality of safety-related material, structures, systems and components through all phases of their fabrication, construction, testing and inspection contrary to the quality assurance criteria of 10 CFR Part 50 Appendix B. Many vendor-supplied components were on the construction site and were approved for installation before code-defined deficiencies and nonconformances were identified. During construction deficiencies and nonconformances were accepted against code requirements. Without effective surveillance and inspection by the Applicant, and others, of material suppliers, component vendors, and construction contractors, all safety-related material, structures, systems, and components must be considered of questionable integrity. Because effective surveillance and inspection were not performed, the safe operation of the Callaway Plant is in jeopardy and should not be licensed.

Deficiencies and nonconformances which evidence the failure of the quality assurance program include but are not limited to the following:

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I. SUBSTANDARD REINFORCED CONCRETE CONSTRUCTION

A. Embedded Plates

Embedded plates, or embeds, so called because they are embedded in concrete, are fixtures installed in concrete walls to support the ends of load-bearing steel beams, piping and other structures. The plates are made of steel with short steel studs welded to one face, like the bristles of a brush. They are mounted flush with the wall surface, with the studs extending into the concrete. The exposed surfaces of the plates serve as point of attachment for girders and other structural members. If an embedded plate tears loose from a wall, the result could be the collapse of an entire floor, breakage of critical pipes in the primary and emergency core cooling systems, and even core melt-down (Class 9 accident).

When the Callaway Plant was approximately five and one-half to seven percent complete, a stop-work order was issued on June 9, 1977, when it was discovered that some of the studs were not properly welded to the embedded plates. (*See* NRC Report No. 50-483/77-10, p. 8). Prior to June 9, 1977, 480 plates had been installed in the plant. (*See* NRC Report No. 50-483/80-14, p. 4). The NRC and the Applicant do not know how many of those 480 plates contain faulty welds, they do not know where those plates are located in the plant, they do not know what loads each plate must bear, and they do not know what the consequences of plate failure would be to the safe operation of the plant and to the health and safety of the public. (*See, e.g.*, NRC Report No. 50-483/80-14 Attachment A — item 17, pp. 4-5 and Attachment B — item 17, pp. 5-6).

The Applicant and NRC staff do know that after the June 1977 stop-work order, many unused plates had to be repaired (*See* NRC Report No. 50-483/77-10, p. 8) or were returned to the manufacturer. There is evidence of multiple defects on some plates. (*See* NRC Report No. 50-483/80-14, Attachment B, p. 3). Although it is not known whether the manufacturer inspected the plates before shipping them to Callaway (*see* NRC Report No. 50-483/80-14, Attachment B, p. 2), none of the 480 installed plates were removed and reinspected, and, none were repaired or replaced.

During the process of evaluating the question whether the embedded plates presented a safety-significant problem, the Applicant improperly determined, with the NRC's apparent approval, that certain exceptions to structural welding code standards would be tolerated. (*See, e.g.*, NRC Report No. 50-483/80-14, pp. 7-10).

We contend that inadequate and incomplete inspection and testing were performed. Omissions include the failure to conduct live-load tests and,the failure to consider whether defective plates could withstand the effects of an earthquake as per 10 CFR Part 100, Appendix A, Section VI.

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B. Cracks in Concrete*

There exist several cracks in concrete structures at the Callaway Plant that affect its safe operation. Examples include, but are not necessarily limited to, the following:

1. A crack up to ¼ inch wide was discovered in the Reactor Building in the reactor cavity moat area in May 1977, a month after the concrete mat was poured. The crack extended approximately 270 degrees around the circumference. Upon visiting the site in June 1977, an NRC inspector was unable to view repairs performed on this crack because work had progressed to an extent that made physical inspection of the repair impossible. (*See*, NRC Report No. 58-483/77-06, pp. 20-21.)
2. The NRC was notified by a Callaway Plant ironworker in January 1978 that a lift of the north wall of the Control Building had been poured above a part of the wall which contained a crack approximately 12 feet long and 8 inches deep, and which extended from the inside to the outside of the wall and which apparently had been overlooked by the Applicant's quality assurance personnel. (*See*, NRC Report No. 50-483/78-01, p. 20.)

C. Honeycombing

Instances of air pockets or voids, known as honeycombing, have been found in concrete structures at the Callaway Plant. As described in NRC Regulatory Guide 1.55, "Concrete Placement in Category I Structures":

> [T]he presence of numerous concrete voids which have been detected at or near the surfaces of nuclear containment buildings raises concern about the density of portions of these and other concrete structures that cannot readily be inspected. For such unaccessible areas, the only method of assuring a quality concrete structure is through good planning and control of the placement of concrete and all items embedded in it.

The instances of honeycombing at Callaway include but are not limited to:

1. Reactor Building Base Mat

On May 31, 1977, voids described by the NRC as up to six inches, but described by a worker as big enough for a man to crawl into, were found in the tendon access gallery of the reactor base mat. (*See*, NRC Report No. 50-483/77-06, pp. 21-22).

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*Eliminated from proceeding by grant of summary disposition.

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Repairs were undertaken at this time, but during the NRC inspection of August 31-September 2, a stop-work order was issued because of a discrepancy in work specifications concerning the testing of dry-pack group. (*See*, NRC Report No. 50-483/77-07, p. 13). The stop-work order was lifted on December 7, 1977, after the necessary changes in specifications were made (*see*, NRC Report No. 50-483/78-01, pp. 2-3), but no information is available on whether any testing was performed on repairs done prior to the stop-work order. A report dated August 1, 1977, by Wiss, Janey, Elstner and Associates, Inc., described a soniscope study performed by this firm to determine the possibility of additional honeycombing within the 10 foot thick base slab. The study states that, "Based upon a 25 percent sample . . . internal honeycomb *probably* does not occur in the base slab, except at those 19 areas where honeycomb was visible." (*See*, NRC Report No. 50-483/77-07, pp. 12-13, emphasis added.) This assessment of probability is the only assurance given that no additional honeycombing exists. According to a letter from James Keppler, Director, Region III, NRC, to Kay Drey dated January 3, 1979, the tendon access gallery represents nineteen percent of the base mat area. In the same letter Mr. Keppler described the twenty-four large holes which were repaired, as follows:

> Large voids are defined as those that require approval prior to repair. The largest void in this category was approximately 22 square feet in surface area, and it was irregular in shape. Its maximum depth was 17 inches, and its average depth was 8 inches. The smallest void in this category was approximately 0.25 square feet in surface area, and its maximum depth was 5 ½ inches. The size of the remainder of the voids in this category varied between those previously described.

2. *Reactor Building Dome*

Four areas of concrete imperfection in the Reactor Building dome were identified by Union Electric personnel during an inspection on August 22 and 27, 1980. These imperfections were attributed to "the complex nature of those portions of the dome slab where the imperfections occurred." However, on December 12, 1980, NRC personnel noticed that blockouts for the tendon grease vents had not been removed to facilitate inspection, and after the removal of the blockouts on December 13, three additional honeycomb areas were found. After conducting interviews with UE personnel concerning the three new void areas, the NRC concluded that, "There appeared no plausible explanation for their occurrence," and that ". . . there was not adequate assurance that the imperfections' existence were limited to only those areas identified." (*See*, NRC Report No. 50-483/80-30, pp. 3-4.)

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D. Concrete Cover*

There exist many areas where concrete coverage of reinforcing bars in concrete walls and floors at the Callaway Plant does not adhere to requirements. Bechtel Power Corporation's interpretation of the cover requirements was that minimum cover requirements could be reduced by one-third, but the NRC stated in a meeting between NRC, UE, Bechtel, and Daniel International personnel on January 23, 1978, that no reduction of the two-inch cover minimum is acceptable. However, the NRC indicated that it would be acceptable "if the cover requirements were fully met in the area of the sixth lift, utilizing the fifth lift as a transition area." (*See*, NRC Report No. 50-483/77-11, pp. 10-11.)

Some examples of nonadherence to concrete cover requirements are as follows:

1. At 340 degrees azimuth, vertical reinforcement bars and supporting bars for the horizontal tendon sheathing in the 3rd lift of the reactor containment wall had concrete cover "less than that specified by NRC requirements, but within the concrete cover requirements as interpreted by licenses and contractors." (*See*, NRC Report No. 50-483/77-11, pp. 4 and 9-11.)
2. NRC inspectors observed the preplacement preparation of the fourth lift of the exterior wall of the Reactor Containment Building, finding 14 unacceptable items, in half of which concrete cover was less than the 2 inch minimum required or more than the 9.6 inch maximum required. These items include instances where the concrete cover is as small as 5/8 of an inch (at azimuth 210 degrees) and as great as 12 inches (at azimuth 200 degrees). Some items were corrected, and the rest were within the range judged to be acceptable below the sixth lift because of the one-third placement tolerance. (*See*, NRC Report No. 50-483/78-01, pp. 9-11.)

II. SUBSTANDARD PIPING

A. Material Manufacturing Deficiencies

Safety-related pipe installed at Callaway was manufactured by a company or companies which did not have adequate control of welding parameters. This resulted in known cases of defects which did not comply with the requirements of the American Society of Mechanical Engineers (ASME) Code. The evaluation and acceptance of those defects and deficiencies were not done in accordance with the ASME Code. The safety of pipe installed at Callaway remains in question and

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*Eliminated from proceeding by grant of summary disposition.

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demands further investigation before an operating license should be issued. For example:

1. In May 1979 a pipefitter discovered and reported a substandard piece of ASME Class II SA-358 piping which had been installed in the emergency core cooling system. The pipe was substantially out-of-round, was machined below the minimum wall, and had rejectable weld defects on the inside of a longitudinal seam weld. (*See*, NRC Report No. 50-483/80-10.) The piping was approved for shipment at the vendor's, was accepted on site, and was installed despite these deficiencies.
2. Substandard fusion welded SA-312 pipe manufactured by Youngstown Welding and Engineering Company and fabricated into safety-related pipe spools by Dravo Corporation has been installed at the Callaway Plant. (*See*, NRC/IE Bulletin 79-03 and 79-03A, and Union Electric letter ULNRC-314 dated May 11, 1979, to NRC - Region III). The evaluation and acceptance of this substandard SA-312 piping were not performed according to the requirements of Section III of the ASME Code.

B. Piping Subassembly Deficiencies

Additional evidence of deficiencies in surveillance and inspection functions include the following: In 1979 it was discovered that pre-assembly piping formations with defective welds from Gulf & Western were accepted and were installed at Callaway. After installation it was also discovered that the vendor had used improper radiographic techniques. (*See*, SNUPPS letter SLNRC-79-20 of November 29, 1979, to NRC — Region I, and Bechtel Final Report of November 28, 1979.

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Cite as 16 NRC 1895 (1982) LBP-82-110

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of

Docket Nos. 50-440-OL
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2)

December 13, 1982

The Licensing Board declines to reconsider its earlier decision admitting a hydrogen control contention and reaffirms its earlier decision that petitioners have sufficient basis for the admission of this contention.

RULES OF PRACTICE: MOTIONS FOR RECONSIDERATION

Motions for reconsideration ordinarily must be filed within ten days of a Board decision. Thereafter the Board decision becomes the law of the case, subject to untimely reconsideration only upon demonstration of good cause for late filing.

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MEMORANDUM AND ORDER
(Concerning Reconsideration and Dismissal of Hydrogen Control Contention)

On December 6, 1982, the Staff of the Nuclear Regulatory Commission (staff) requested that we reconsider the admission of Issue #8, concerning hydrogen control, and dismiss the contention. During oral argument, held by telephone last Thursday, Cleveland Electric Illuminating Company, *et al.*, supported the motion and both Ohio Citizens for Responsible Energy (OCRE) and Sunflower Alliance Inc., *et al.* (Sunflower) opposed it, albeit that Sunflower's opposition was silent.

As a threshhold matter, OCRE opposed the motion as late-filed, without good cause for late filing. Staff argued that the motion was not late-filed because there is no explicit regulatory requirement governing motions for reconsideration, other than motions for reconsideration of final decisions, for which there is a ten-day limit. 10 CFR §2.771. Staff also argued, by implication, that responses to interrogatories filed by OCRE on November 15, 1982, indicated that it was unable to define a specific basis for its hydrogen contention and that this furnished good cause for late filing.

We consider the staff's motion to be untimely. Although the provision governing the timeliness of appeals from final decisions is only suggestive, we think that the brief time allowed for motions for reconsideration on such a complex matter indicates an analogous period for application to motions concerning the reconsideration of interim matters. If motions for reconsideration may be filed at any time, then the work of the Board could be unduly hindered. Furthermore, there is little need to reconsider our decision to admit this contention since we have arrived at a later stage of litigation in which summary disposition motions are being considered. Summary disposition is an adequate remedy for disposing of contentions for which there is now no evidentiary basis, and we need not go back to square one for staff's convenience.

We reject the argument that OCRE's interrogatory responses provided good cause for late filing. OCRE disclosed the basis for its contention at the time it filed the contention, and we decided that the contention should be admitted. That OCRE has not yet found additional basis may provide staff with hope that it may succeed on summary disposition (unless OCRE finds further relevant information through outstanding discovery), but OCRE's present degree of success in discovery does not provide retroactive grounds for dismissing its contention.

At last Thursday's telephone conference, we also discussed the merits of the motion for reconsideration. Staff has urged that the Appeal Board's decision in ALAB-675, 15 NRC 1105 (1982) at 1114-1115 strongly intimates that we should dismiss this contention. We disagree. The Appeal Board's language cast no doubt on the propriety of admitting this contention. It spoke solely to the need to specify a particular type of credible accident scenario in order to litigate meaningfully the adequacy of a hydrogen control mechanism. On this point, the Appeal Board interpreted our decision to be consistent with this need. (Although this point had not occurred to the Board, it is obviously correct and will be followed by us.) Consequently, we find no basis in ALAB-675 for reconsidering our decision to admit the hydrogen control contention.

We note that during our telephone conference on this subject, we decided this issue solely on its merits and then requested staff's views on whether a written opinion was necessary. Since staff stuck by its right to a written opinion (*see* 10 CFR §1.730(e), which we interpret to permit oral decisions on written motions provided the decision is during a transcribed conference), we have prepared one. In the course of preparation of the decision, we concluded that the motion should be dismissed both on the merits and because it was late-filed.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 13th day of December, 1982,

ORDERED

The motion for reconsideration filed by the Staff of the Nuclear Regulatory Commission on December 6, 1982, is denied.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland.

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Cite as 16 NRC 1898 (1982) LBP-82-111

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon

In the Matter of | **Docket No. 50-155**
(Spent Fuel Pool Amendment)

CONSUMERS POWER COMPANY
(Big Rock Point Plant)

December 14, 1982

The Licensing Board rules that it lacks jurisdiction to reopen the record on an issue that pends before the Appeal Board, or to permit discovery with respect to that issue.

LICENSING BOARDS: JURISDICTION

Once an appeal of an issue is taken, the Licensing Board is divested of jurisdiction over that issue and may not order discovery concerning whether or not it is appropriate for the record on the issue to be reopened.

MEMORANDUM AND ORDER

(Concerning Jurisdiction Over Discovery About a Matter That Has Been Appealed)

On December 13, 1982, Consumers Power Company (applicant) filed a request for us to issue a subpoena to Harold R. Denton, Director of Nuclear Reactor Regulation. Applicant supported its request by citing information contained in a

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memorandum sent by Mr. Denton to the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel in July 1982. That memorandum, which was not served in this docket until November 22, 1982, allegedly contains staff views that are supportive of the safety of the Big Rock Point spent fuel pool but were not reflected in our hearing record. Applicant therefore requests, in effect, that it be permitted to conduct discovery for the purpose of presenting a request to reopen our hearing record.

Before we act, we wish to clarify the record regarding our personal knowledge and regarding another question that we will answer because of our familiarity with the hearing record. First, none of the undersigned judges had any knowledge of the July memorandum until it was served on us on November 22, 1982. Had we obtained knowledge, we would have considered the memorandum relevant to this case and would have had it served in this docket. Second, we tentatively agree with applicant, subject to contrary argument, that at least part of the information in the Denton memorandum was not placed in evidence in this case and that the importance of that memorandum or its underlying analyses to a possible motion for reconsideration can be determined only if discovery is permitted. (In the interest of expedition, we urge applicant and staff to attempt to agree on how applicant can obtain the information it needs about this question, with full consideration for the rights of the intervenors to participate in the development of the record.)

In this instance, there is a serious question concerning our jurisdiction to act on an issue that has already been appealed. *Metropolitan Edison Company, et al.* (Three Mile Island Nuclear Station, Unit No. 1), ALAB-699, 16 NRC 1324 (1982). We find that we lack jurisdiction to reopen the record on an issue that pends before the Appeal Board. Accordingly, we conclude that we also lack the jurisdiction to permit discovery designed to inform us about whether to reopen the record.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 14th day of December, 1982,
ORDERED

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Consumers Power Company's December 13, 1982, Application for a Subpoena is denied without prejudice because we lack jurisdiction.

THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Oscar H. Paris
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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Cite as 16 NRC 1901 (1982) LBP-82-112

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman
Dr. Walter H. Jordan
Dr. Harry Foreman

In the Matter of **Docket No. 50-382-OL**

LOUISIANA POWER AND LIGHT COMPANY
(Waterford Steam Electric Station,
Unit 3) **December 14, 1982**

The Licensing Board grants in part and denies in part Applicant's Motion For Reconsideration or Clarification.

OPERATING LICENSES: LOW POWER TESTING AND OPERATION

License conditions addressing off-site emergency planning issues need not be met prior to issuance of a fuel loading and low power license. 10 CFR §50.47(d).

OPERATING LICENSES: LOW POWER TESTING AND OPERATION

Absent a motion filed pursuant to 10 CFR §50.57(c), the issue whether fuel loading and low power operation should be authorized is not before a Licensing Board.

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EMERGENCY PLANS

10 CFR §50.47 requires a finding that there is reasonable assurance that adequate protective measures can and will be taken, and adequate protective measures include a means for evacuating special populations. The regulations do not preclude a Licensing Board from requiring letters of agreement for the provision of drivers to evacuate the special populations.

MEMORANDUM AND ORDER

(Re Applicant's Motion for Reconsideration or Clarification)

MEMORANDUM

On November 3, 1982, this Board issued its first partial initial decision on the operating license application for the Waterford Steam Electric Station, Unit 3. LBP-82-100, 16 NRC 1550 (1982). On November 12, 1982, Applicant filed a Motion for Reconsideration or Clarification. Therein, Applicant raised two objections: (1) that the Partial Initial Decision should not have imposed off-site emergency planning conditions which had to be met prior "to issuance of an operating license"; rather such conditions should have been imposed to be met prior "to issuance of an operating license authorizing operations of greater than 5% of the rated power"; and (2) that the Board erred in conditioning the license upon execution of letters of agreement *with support parishes* for vehicles *and drivers*.

On November 29, 1982, Joint Intervenors filed their answer in opposition to Applicant's Motion, and on December 2, 1982, the NRC Staff filed its answer in support of Applicant's Motion.

A. Satisfaction of Conditions Prior to Issuance of an Operating License

We agree with both Applicant and Staff that the conditions imposed address off-site emergency planning issues and, pursuant to 10 CFR §50.47(d), need not be met prior to issuance of a fuel loading and low power (up to 5%) license. We do not, however, view the Order in our Partial Initial Decision as being inconsistent with 10 CFR §50.47(d). That Decision addressed the application by LP&L for a full power license only, and the "operating license" we conditioned in our Order referred to that full power license.

The Board feels this clarification should resolve Applicant's concern. We decline to amend the language of the Order, however, lest it be misinterpreted as authorizing a low power license. Absent a motion filed pursuant to 10 CFR

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§50.57(c), the issue whether fuel loading and lower power should be authorized is not before this Board.

B. Letter of Agreement with Support Parishes for Vehicles and Drivers

Applicant's first objection to condition 2 imposed by our Order is that the Order improperly requires letters of agreement to be executed "with support parishes." We find this objection reasonable; we did not intend to preclude agreements with agencies or political subdivisions of a support parish, or with other responsible entities. Accordingly, the Board modifies condition 2 as set forth in the Order, *infra*.

Applicant's second objection to condition 2 is that the letters of agreement should be for vehicles only rather than for vehicles and drivers. Applicant asserts (1) that agreements for drivers are not required by the regulations, (2) that the issue was not raised in the proceeding, (3) that the condition may be impossible to fulfill, and (4) that the condition is not supported by the record.

The Board agrees with Applicant that the regulations do not *require* agreements for drivers; however, neither do they preclude such a requirement. 10 CFR §50.47(a)(1) requires a finding that there is reasonable assurance that adequate protective measures can and will be taken, and adequate protective measures include a means for evacuating special populations. (*See* Findings 59 and 60, LBP-82-100, 16 NRC 1583 (1982).) The argument that a commitment of vehicles by itself satisfies this regulatory requirement is frivolous and specious; a vehicle without a driver is not a "means for evacuation."

The Board also agrees with Applicant that 10 CFR §50.47(a)(2) requires the NRC's findings on the adequacy of the off-site plans be based on the findings and determinations of FEMA, and provides that a FEMA finding constitutes a rebuttable presumption on questions of adequacy and implementation capability. We reject, however, Applicant's characterization of FEMA's findings in this case. Applicant states that FEMA found the evacuation plans to be adequate, "subject to the existence of letters of agreement for providing necessary vehicles." (Applicant's Motion for Reconsideration or Clarification at 7.) In its formal interim findings, FEMA stated that "Inserts to Tab 7, encl. 1., should be completed." (Comment on Criterion J.10.g, Staff Ex. 5, at F-38.) Tab 7, enclosure 1 to the St. Charles Parish Plan is entitled "St. Charles Parish Transportation Providers" (App. Ex. 3, at 104), and Tab 7, enclosure 1 to the St. John the Baptist Parish Plan is entitled "St. John the Baptist Parish Transportation Providers" (App. Ex. 3 at 267). We do not interpret "transportation" as being synonymous with "vehicles." Although it may be so used, its more common definition is the act of transporting. In its interim findings, FEMA also stated that the plans "[n]eed letters of agreement or understanding from non-governmental organizations being relied upon to provide

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resources" (Staff Ex. 5 at F-35, emphasis added; *See also id.* at F-34). Again, we do not believe that the word "resources" excluded human resources, *i.e.*, support personnel. Therefore, the formal interim FEMA findings do not limit the subject of the required letters of agreement to "vehicles."

Similarly, the direct testimony of FEMA witnesses is inconsistent with Applicant's assertion. Referring to means to evacuate people who are without vehicles, the FEMA witnesses stated:

> Chapter 8 of the respective parish plans state that the parishes will enter into agreements or develop letters of understanding with certain *transportation providers* including bus companies. The current plan does not include any letters of agreement for review. The plans, therefore, do not provide sufficient information to determine whether or not the parishes are capable of undertaking a timely evacuation of the public without vehicles.

FEMA test., fol. Tr. 2864, at 10 (emphasis added). Similarly, FEMA witnesses referred to the need for letters of agreement for ambulance *services*. *Id.* at 12, 14, and 15. With respect to the evacuation of school children, FEMA witnesses did testify that "no letters of agreement have been included in the current plan to indicate that Jefferson and St. James Parishes will provide buses. . . ." (*Id.* at 10-11.) It is ambiguous whether "providing buses" includes or excludes drivers. The FEMA witnesses continued, however, and stated "FEMA cannot conclude at this time whether there are sufficient *resources* within the parishes to accomplish a complete evacuation of the affected students in a timely manner. (*Id.* at 11, emphasis added; *see also* FEMA testimony on cross-examination referring to letters of agreement for "transportation resources," Tr. 2870-73.)

We conclude, therefore, that FEMA did not find that "the evacuation plans were adequate, subject to the existence of letters of agreement for providing necessary vehicles." Rather, FEMA found the plans inadequate, because of the nonexistence of letters of agreement for transportation resources, *i.e.*, vehicles *and drivers*.

The Board also rejects Applicant's argument that condition 2 is improper, because the need for letters of agreement for drivers was not raised in this proceeding. First, the availability of drivers is relevant to the contention addressing the adequacy of procedures for evacuating special populations, and we view it as a necessary element of Applicant's case. 10 CFR §2.732. Second, as discussed above, we found that the need for letters of agreement for drivers was raised by FEMA witnesses in their testimony, and by the NRC Staff in proffering FEMA Interim Findings as evidence. Finally, the issue was raised by Joint Intervenors in cross-examination of Mr. Madere, the Civil Defense Director for St. John the Baptist Parish. Mr. Madere stated that he anticipated that personnel would come from support parishes to evacuate the risk parishes (Tr. 2509), but that the plans and procedures were not yet formulated (Tr. 2560). The planners had not yet determined if the regular drivers of the vehicles to be supplied would assist in the evacuation or would merely bring the vehicles to a drop point (Tr. 2558-59). Mr.

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Madere did confirm that some type of commitment from the drivers would be required (Tr. 2562).

For the same reasons, we reject Applicant's fourth argument, that the record does not support the need for condition 2. We interpret the FEMA findings and testimony as requiring agreements for drivers, and pursuant to 10 CFR 50.47(a)(2) we view these unrebutted findings as conclusive. We also find support for the condition in the testimony of Mr. Madere, which indicated the need to commit drivers (Tr. 2559-63) and the inadequacy of the present plans (Tr. 2560). These concerns are not mollified, nor are FEMA's findings rebutted, by the assertion that risk parish emergency workers could be used as drivers (Tr. 2563, 2620). The record does not reveal any such definite plan, and the Board would have serious doubts as to the feasibility of such a plan.

Applicant's last argument is that condition 2 may be impossible to fulfill, because Parishes or other organizations providing drivers may not have the authority or be willing to bind individual drivers. We find this argument to be speculative and unpersuasive. We do not believe we have imposed an insurmountable obstacle; condition 2 seeks only to require identification of the source or sources of the drivers to be used during an evacuation, and the provision of some reasonable commitment. If it becomes apparent that condition 2 cannot be met, this Board might reconsider. However, we would require specifics concerning the infeasibility of the condition, a concrete alternative plan, and the opportunity for Joint Intervenors, the Staff and FEMA to respond.

ORDER

For the foregoing reasons, it is, this 14th day of December, 1982
ORDERED

Applicant's Motion for Reconsideration or Clarification is granted to the extent:

a. That condition 2 of the Order of our Partial Initial Decision, LBP-82-100, and the pertinent portion of Finding 81 of that Decision are amended to read:

> "Letters of agreement with the support parishes, agencies or political subdivisions of the support parishes, or with other responsible entities, for vehicles and drivers necessary to implement the evacuation plans shall be completed and submitted to the NRC Staff."

b. That in line 17 of page 1566 of the Partial Initial Decision, LBP-82-100, after the words "with support parishes," the following words are added:

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"agencies or political subdivisions of the support parishes, or with other responsible entities,"

Judges Jordan and Foreman concur but were unavailable to sign this issuance.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 14th day of December, 1982.

Cite as 16 NRC 1907 (1982) LBP-82-113

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James P. Gleason, Chairman
Dr. Oscar H. Paris
Frederick J. Shon

In the Matter of **Docket Nos. 50-247-SP**
50-286-SP

CONSOLIDATED EDISON COMPANY
OF NEW YORK
(Indian Point, Unit No. 2)

POWER AUTHORITY OF THE STATE
OF NEW YORK
(Indian Point, Unit No. 3) **December 15, 1982**

The Licensing Board grants the NRC Staff a protective order regarding an interrogatory requesting the Staff to identify and list its ten most serious criticisms of the Indian Point Probabilistic Safety Study.

RULES OF PRACTICE: DISCOVERY; AGAINST NRC STAFF

Neither 10 CFR §2.741, concerning the production of documents, nor 10 CFR §2.740, concerning discovery in general, requires the NRC Staff to compile a list of criticisms of a document at issue in the proceeding or to formulate a position on those criticisms in response to an interrogatory. It is sufficient for the Staff to provide to the Intervenor those documents containing the Staff criticisms from which the Intervenor itself may compile a list.

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MEMORANDUM AND ORDER
(Granting Staff's Request for Protective Order)

On November 19, 1982, the NRC Staff filed a motion for a protective order regarding UCS/NYPIRG's Interrogatory No. 5. UCS/NYPIRG has not responded to the motion.[1]

Interrogatory No. 5 requests Staff to identify and list the ten most serious Staff criticisms of the IPPSS. Staff objects to this request on the grounds that no list of criticisms exists and neither 10 CFR §2.741, concerning the production of documents, nor 10 CFR §2.740, concerning discovery in general, requires the Staff to search through documents to create such a list. Moreover, Staff asserts that the compilation and review of such a list, as well as the formulation of a Staff position, would require extensive Staff effort which would be inconsistent with NRC case law and principles enunciated in *Moore's Federal Practice*. Staff represents that it has amassed, in response to Interrogatory No. 2, those documents which contain Staff comments on the IPPSS and is making such documents available to UCS/NYPIRG for inspection and copying.

We find that the Staff's provision of these documents, from which UCS/NYPIRG may itself compile a list of criticisms of the IPPSS, fulfills Staff's discovery obligations. Staff is not required to compile a list of criticisms nor to formulate a position on them in response to an interrogatory.

For the foregoing reasons, it is this 15th day of December, 1982

ORDERED

That the Staff's Motion for a Protective Order is *granted*.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

James P. Gleason, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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[1] Pursuant to our July 6, 1982, Memorandum and Order (Setting Forth Rules Governing Discovery) UCS had until December 1, 1982, to respond to Staff's motion (7 days from service plus 5 days for mailing). Even if UCS mistakenly believed the time for response was 10 days plus 5 days for mailing, as provided in 10 CFR Part 2, it failed to submit a response on time.

Cite as 16 NRC 1909 (1982) LBP-82-114

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of

Docket Nos. 50-440-OL
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2)

December 22, 1982

The Licensing Board denies in part and grants in part the NRC staff's motions for summary disposition of various contentions.

RULES OF PRACTICE: SUMMARY DISPOSITION

The Board discusses the standards for summary disposition, accepting principles presented to it both by the applicant and by an intervenor.

RULES OF PRACTICE: SUMMARY DISPOSITION; OPINION ON ULTIMATE FACT

An affidavit submitted on summary disposition may present an opinion on an ultimate issue of fact, such as whether the quality assurance program has been satisfactory. However, unless the basis for this conclusion is stated, the Board may not grant summary disposition based on such an opinion. The Board must make decisions on ultimate issues of fact based on its own judgment and it may not substitute a staff judgment for its own.

RULES OF PRACTICE: SUMMARY DISPOSITION; PRESUMPTION

When an intervenor has demonstrated that there is a genuine issue of fact concerning serious deficiencies in the management of a quality assurance program, in violation of NRC regulations, there is a presumption that such deficiencies resulted in safety problems. Applicant may rebut this presumption either by showing that there were no serious management deficiencies or by showing that these deficiencies did not cause safety problems that will affect plant operation.

TECHNICAL ISSUES DISCUSSED

Asiatic clams
Corbicula fluminea
Scram discharge volume (Mark III containment)
Mark III containment (scram discharge volume)
Quality assurance (control of contractors)
LOCA (pipe break in scram discharge volume; Mark III containment)

MEMORANDUM AND ORDER

(Concerning Summary Disposition: Quality Assurance, *Corbicula* and Scram Discharge Volume Contentions)

The Staff of the Nuclear Regulatory Commission (staff) filed summary disposition motions on the Quality Assurance Contention (filed October 29, 1982), the *Corbicula* Contention (filed November 12, 1982) and the Scram Discharge Volume Contention (filed November 12, 1982). These motions are granted except for the genuine issues of fact specifically found to exist in this opinion.

With respect to the Quality Assurance Contention, we conclude that there are genuine issues of fact concerning whether applicant's quality assurance program is and has been adequate to assure that contractors perform adequately, without compromising plant safety. In examining these issues we particularly want to learn in detail about the September 24, 1982, notice of violation issued to Cleveland Electric Illuminating Company, about that portion of the July 13, 1978 notice of violation that dealt with contractor performance (including information about the cause of this violation), about the specific steps taken to remedy this particular aspect of the July 13, 1978 notice and about the specific steps being taken to remedy the September 24, 1982 notice of violation (and about the cause of that violation).

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There are no genuine issues of fact with respect to the *Corbicula* Contention, principally because applicant's evidence of its ability to detect the presence of *corbicula* and to prevent their presence from evolving into a safety problem is uncontroverted. There is no genuine issue of fact with respect to the scram discharge volume contention. We note that Ohio Citizens for Responsible Energy (OCRE) did not oppose the summary disposition of this contention (December 3, 1982).

I. STANDARDS GOVERNING SUMMARY DISPOSITION DECISIONS

Decisions concerning summary disposition are critical. If a motion is too readily granted, intervenors are deprived of their opportunity to cross-examine witnesses and otherwise establish that the applicant has not carried its burden of persuasion on issues of potentially great safety and environmental importance. If a motion is too readily denied, the result is unnecessary delay and hearing expense. In addition, an inappropriate denial of summary disposition may cause the hearing process to concentrate too heavily on unimportant issues and to detract from the time and energy that might be devoted to more important issues.

Not surprisingly, the parties' filings place different emphasis on the harm of too readily granting or too readily denying a motion for summary disposition. The staff stresses principles favoring the granting of such motions. OCRE stresses principles favoring the denial of such motions. We have decided that each of these versions is essentially correct and that together they state in a fair way the principles governing our decision.

The staff states:

> The Commission's Rules of Practice provide that summary disposition of any matter involved in an operating license proceeding shall be granted if the moving papers, together with the other papers filed in the proceeding, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law. 10 CFR §2.749(d). The use of summary disposition has been encouraged by the Commission and the Appeal Board to avoid unnecessary hearings on contentions for which an intervenor has failed to establish the existence of a genuine issue of material fact. *E.g.*, *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 457 (1981) and *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550-51 (1980). A material fact is one that may affect the outcome of the litigation. *Mutual Fund Investors Inc.* v. *Putnam Management Co.*, 553 F.2d 620, 624 (9th Cir. 1977).

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> When a motion for summary disposition is made and supported by affidavit, a party opposing the motion may not rest upon the mere allegations or denials of an answer but must set forth specific facts such as would be admissible in evidence that show the existence of a genuine issue of material fact. 10 CFR §2.749(b). All material facts set forth in the statement of material facts required to be served by the moving party will be deemed to be admitted unless controverted by the statement of material facts required to be served by the opposing party. 10 CFR §2.749(a). Any answers supporting or opposing a motion for summary disposition must be served within twenty (20) days after service of the motion. *Id.* If no answer properly showing the existence of a genuine issue of material fact is filed, the decision sought by the moving party, if properly supported, shall be rendered. 10 CFR §2.749(b).

On the other hand, OCRE states:

> In addition to the requirements of 10 CFR §2.749, various Licensing Board and Appeal Board decisions set the standards for summary disposition. The Appeal Board has stated that "summary disposition is a harsh remedy. It deprives the opposing litigant of the right to cross-examine the witness, which is perhaps at the very essence of an adjudicatory hearing." *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 755 (1977). Summary disposition is only authorized where the moving party is entitled to a judgment as a matter of law, where it is quite clear what the facts are, and, where no genuine issue remains for trial. In determining such a motion, the record will be reviewed in the light most favorable to the party opposing the motion. The opposing party need not show that it would prevail on the factual issues, but only that there are such issues to be tried. *Pacific Gas & Electric Company* (Stanislaus Nuclear Project, Unit No. 1), LBP-77-45, 6 NRC 159, 163 (1977).
>
> Before granting a motion for summary disposition, the Licensing Board must demonstrate that there clearly is no possibility that there exists a litigable issue of fact. *Power Authority of the State of New York* (Greene County Nuclear Power Plant), LBP-79-8, 9 NRC 339, 340 (1976). [We note our reservations about the use by our fellow judges of the phrases "must demonstrate" and "no possibility" in this sentence.] In addition, in an operating license proceeding, where significant health and safety or environmental issues are involved, the Licensing Board should only grant summary disposition if it is convinced that the public health and safety and environment will be satisfactorily protected. *Cincinnati Gas & Electric Company, et al.* (William H. Zimmer Nuclear Station), LBP-81-2, 13 NRC 36, 40-41 (1981). Even if no party opposes a motion for summary

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> disposition, the movant's filings must still establish the absence of a genuine issue of material fact. *Perry, supra,* at 753-754.

In this opinion, we adopt the approach of first examining, with care, the intervenor's answer to summary disposition. Although the staff initiated these motions, summary disposition must be denied if intervenors state any genuine issues of material fact. Hence, it is appropriate to commence with the genuine issues that intervenors allege and to examine each in light of the motion and in light of Cleveland Electric Illuminating Co., *et al.*'s (applicant) supporting responses. If intervenors present evidence or argument that directly and logically challenges the basis for summary disposition, creating a genuine issue of fact for resolution by the Board, then summary disposition cannot be granted. On the other hand, if intervenors' facts are fully and satisfactorily explained by the other parties, without any direct conflict of evidence, then intervenors will have failed to show the presence of a genuine issue of material fact. However, after finishing this process of reviewing facts contained in the intervenor's response, we must also examine the motion to see whether the movant's unopposed findings of fact establish the basis for summary disposition.

II. THE QUALITY ASSURANCE CONTENTION

A. The Contention

Issue #3, the Quality Assurance Contention, was introduced by Sunflower Alliance Inc., *et al.* (Sunflower). It states:

> Applicant has an inadequate quality assurance program that has caused or is continuing to cause unsafe construction.

The scope of this contention is, however, somewhat narrower than would appear on its face because it has been limited to a February 1978 stop work order, steps taken to remedy the deficiencies that led to that order, and to residual deficiencies that may be described as the afterbirth of that order. LBP-81-35, 14 NRC 682, 687 (1981).

As the result of the facts presented to us by the parties, we now realize that it is applicant that issued the stop work order, as of February 8, 1978 and that this stop work order was acknowledged in an immediate action letter sent on that same date by the Nuclear Regulatory Commission to applicant. The key documents in understanding the reasons for the stop work order are: (1) a February 8, 1978 letter to applicant from the Director of Region III of the Commission, confirming the applicant's stop work order and listing eight numbered items, plus subparts, that would be reviewed by the staff prior to the lifting of the stop work order, and (2) a Notice of Violation issued by Region III on July 13, 1978, that describes in far greater detail the factual basis for the staff's concern about the inadequacy of applicant's quality assurance program.

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B. Applicable Regulations

As Sunflower correctly advises us, applicant must have an adequate quality assurance program. 10 CFR Part 50, Appendix B, Division II describes the requirements of adequacy, including:

> The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.
>
> * * *
>
> The applicant shall regularly review the status and adequacy of the quality assurance program. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the quality assurance program which they are executing.

C. Analysis of Sunflower's Arguments

1. Safety Problems Relating to the Stop Work Situation

Although Sunflower sets forth the findings of the July 13, 1978 Notice of Violation that was issued by the staff, it provides no argument or evidence that the failures that occurred up to the time of the Notice caused any safety deficiency in Perry. By contrast, the affidavit submitted by applicant in support of staff's motion provides uncontradicted evidence concerning the amount of work completed before the issuance of the Notice, the implementation by applicant of a comprehensive program of corrective action, and the correction of each deficiency. With respect to work completed before the Notice was issued, the uncontradicted evidence indicates that:

> All safety-related concrete that was placed prior to the stop work notice was evaluated by civil/structural engineers to determine whether it met specifications. All placements were determined to be acceptable, a determination agreed to by NRC inspectors. *See* NRC I&E Reports dated October 3, 1979, March 12, 1979, and May 15, 1979.

Affidavit of Murray R. Edelman and Ronald L. Farrell in Support of NRC Staff's Motion for Summary Disposition of Issue Number 3 (November 30, 1982) at 8, also *passim*.

Since applicant has demonstrated that this concrete work was the only important safety work completed prior to July 13, 1978 (Edelman-Farrell Affidavit at 3, ¶7) and since Sunflower presents no argument or evidence that contradicts the evidence that this work was checked and found to be acceptable, we conclude that there is no genuine issue of fact concerning the safety of work performed up to July 13, 1978.

2. *Safety Problems Relating to Supervision of Contractors*

Sunflower has pointed out to us that one deficiency noted in the February 8, 1978 staff letter, confirming applicant's stop work order, appears to have recurred recently. The 1978 letter required, on page 4, that:

> 6. CEI will establish an effective contract specification and control system. . . .
>
> 7. CEI or an independent agent will perform audits of the onsite organizations covered by the CEI quality assurance program (including the Construction Quality Assurance (CQA) and Construction Quality Control (CQC) Elements) to determine the adequacy of established indoctrination, training and retraining programs, and the implementation of these programs. Additionally, specific emphasis will be placed on the identification and documentation of nonconformances to gainfully utilize your established nonconformance trend analysis system.

Between the time of the issuance of the 1978 letter and July 13, 1982, our record contains no indication that there were any serious deficiencies in applicant's quality assurance program. However, on July 13, 1982, the Regional Administrator for Region III sent Cleveland Electric Illuminating Company a letter announcing the results of a Systematic Assessment of Licensee Performance (SALP) covering the period July 1, 1980 to September 30, 1982 [sic]. In that letter, the Regional Administrator stated that applicant's overall performance had been satisfactory and that "management attention and involvement in correcting NRC identified problems appear to be assertive, timely, and effective." However, the letter also contains the following finding:

> [I]t was and still is our opinion that the multitude of problems identified in the electrical area *could be systematic, warranting an assessment of other contractor activities*. . . . We believe the words ". . . management control systems were not totally effective. . . ." put our concerns in the right perspective.
>
> * * *
>
> . . . Based upon our findings in the electrical area, *there was an obvious breakdown in the control of activities warranting both your and our attention*. I am pleased that you have addressed these concerns. We will follow your progress in this regard.

[Emphasis added.] Letter at 2.

It is important to note that these electrical contractor problems were not identified by the quality assurance program of applicant or by the inspection program of the NRC. They were detected as the result of an investigation initiated on October 27, 1981, as the result of "allegations." Sunflower Exhibit D at 6. These allegations are not contained in our record. Nor is a description of the investigation, the findings of the investigators or the basis for concluding that these were not long-standing difficulties. We do have a resulting Notice of Violation (Sunflower

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Exhibit E) which gives us some notion of the violations that were uncovered but fails to give us necessary insights into the significance of these violations in the overall construction program. The Notice also does not discuss the way the investigation was conducted or the basis for concluding that the Notice reflected the full scope of existing deficiencies. The investigation, of which we lack detailed knowledge:

> identified potential items of noncompliances (currently under review for appropriate enforcement action) related to inadequate procedures and QC inspection activities, drawing errors and administrative breakdowns in the performance of audits and handling of nonconformance reports. Taken individually these findings may not represent major problems, but collectively *they reveal deficiencies in the implementation of the quality assurance program in that problems are not identified and corrected in a timely manner.*

[Emphasis added.] *Id.*

Because our record is devoid of evidence concerning the scope or intensity of management and NRC reviews in the period between 1978 and 1982,[1] we are unable to conclude that the failure to detect quality assurance deficiencies during that period indicates that they did not exist. Those reviews also did not detect the 1981 problem, and we have no explanation for why these deficiencies, which apparently are of great potential importance, were not spotted either by applicant or by staff.

We note that neither the applicant nor the staff appear even to have mentioned this current investigation in their filings. Hence, they certainly have not negated the existence of genuine issues of fact arising from the investigation. Staff has attempted to negate these issues by flatly asserting its conclusion that there has been no breakdown in the applicant's construction QA program and that the current deficiencies are not related to the earlier deficiencies. Staff's Motion for Summary Disposition, Affidavit at 2-3, ¶¶9,10. However, staff's conclusion is not buttressed by supporting facts and reasons and does not negate the existence of a genuine issue of fact. Even at trial, were we to accept such unsupported staff statements we would be abrogating our responsibility as judges and substituting the staff's judgment for our own. On ultimate issues of fact, we must see the evidence from which to reach our own independent conclusions.

Applicant also argues that we have required Sunflower to demonstrate that QA deficiencies are linked to unsafe conditions at Perry. LBP-81-35, 14 NRC at 687. That is a correct interpretation. However, we did not anticipate that Sunflower would identify a QA problem in the management of the QA program itself. Nonconformances found by the QA program would have been far less troubling to us than the basic kind of management deficiencies that are in issue. Under the circumstances, we find that there is a genuine issue of fact concerning compliance with the Commission's QA regulations. At that point, given the breadth of this issue and the special knowledge of applicant, we find that the burden of going forward shifts. (The burden of persuasion also rests with the applicant in a licensing proceeding.) In legal jargon, there is a presumption that these apparent deficiencies have caused safety problems and it is applicant's burden to demonstrate either that there were no important breakdowns in the management system or, if there were such breakdowns, that unsafe conditions have not been created.

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[1] Sunflower's December 20, 1982, filing was not authorized by the regulations since it does not appear to be limited to being a response to new material in applicant's filing in support of summary disposition (10 CFR §2.749(b)) and it is not accompanied by good cause for late filing. We have not considered this filing but we note that the accompanying affidavit indicates that NRC reviews may have failed to spot applicant's difficulties in controlling the quality of work of its contractors.

We admit the following as genuine issues of fact for trial:

> The existence, cause, severity, duration and extent of an alleged instance in which applicant's quality assurance program failed by not properly controlling its electrical contractors.
>
> Whether the alleged deficiencies in properly controlling electrical contractors extend to the proper control of other contractors.
>
> Whether deficiencies in the control of contractor activities have resulted in unsafe conditions at Perry.
>
> Whether applicant has an adequate system for periodically reviewing its program for assuring the quality of contractor performance and ascertaining and correcting deficiencies that have arisen, particularly in systems essential to safe plant operation.

3. *Other Alleged Deficiencies*

We recognize that the issues we have just admitted under subsection 2 of this memorandum have great potential breadth. However, Sunflower's opposition to summary disposition appears to have gone further. It appears to be pursuing each of the deficiencies indicated in the 1978 confirmation of the stop work order and the 1978 Notice of Violation. This goes too far.

Sunflower has had an opportunity to conduct discovery. It has asked questions of applicant and examined official records, including Licensee Event Reports (LER). At this time, it has an obligation to explain with specificity its reservations about applicant's program. In particular, if individual LER reports cause it to be concerned about the adequacy of quality assurance, it must explain the reasons for its concern. However, it has not undertaken to discuss even a single LER in its opposition to summary disposition and we are unwilling to assume without more specific argument that issuance of LERs, which are expected to be generated from a quality asurance program, represent a breakdown in that program. Additionally, Sunflower has failed to show that any other aspects of the 1978 confirmation and

Notice of Violation have caused a continuing problem or have resulted in unsafe conditions at Perry.

Consequently, we conclude that the motion for summary disposition of the quality assurance contention should be granted except to the extent that it was denied in subsection 2, above.

III. ASIATIC CLAM CONTENTION

Issue #7 in this proceeding, the Asiatic Clams contention, states that:

> Applicant has not demonstrated that Asiatic clams, *Corbicula fluminea*, will not foul its safety-related cooling systems and it has not demonstrated how it could adequately cope with these clams should they be present.

For the purpose of deciding this motion, we accept OCRE's allegation that *corbicula* have been found in Lake Erie and that their eventual presence near Perry is likely. We will also accept, for this same purpose, its allegation that *corbicula*, if permitted to collect at Perry, would clog pipes and interfere with safety functions intended for those pipes.

However, an essential prong of OCRE's argument is that "applicants have no plans for controlling *corbicula*." OCRE Response to NRC Staff's Motion for Summary Disposition of Issue No. 7 (December 3, 1982), Findings of Fact at v, ¶11. This prong has been broken by applicant's supporting response, which we will discuss momentarily, and OCRE has not responded. Hence, there is no genuine issue of fact concerning the existence or adequacy of a plan to control *corbicula*.

Contrary to OCRE's assertion, applicant has detailed plans for the detection and control of clams. It will monitor for clams both in the vicinity of Perry and at its Eastlake Power Plant, a nearby fossil-fueled plant. Supporting affidavit of Dr. Richard S. Nugent at 4-9. Although *corbicula* are not expected to become a problem in the plume of the recirculating water system at Perry (Affidavit of C. R. Hickey, Jr. and N. E. Fioravante, staff, at 26), we have every reason to believe (and no reason to doubt) that the monitoring system, which is described in great detail by Dr. Nugent, would be effective in detecting *corbicula* if they were present near Perry. *Id*. at 7-8; Nugent at 3-9.

In addition to generalized monitoring, applicant has plans for specific monitoring systems within its plant. Only the raw water systems are susceptible to *corbicula* infestation. The other, demineralized water systems use cation exchangers that lower the pH of water sufficiently to kill *corbicula* that are present. Applicants Answer on Issue No. 7 (December 7, 1982), Affidavit of Richard A. Pender and Ronald L. Scherman at 3 (Pender-Scherman). The Emergency Service Water System ("ESWS") is the only safety-related cooling system using raw water at PNPP. *Id*.

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Applicants have a special plan to monitor the ESWS for the presence of *corbicula* (*id*. at 3-5), and they have initial plans for a $250,000 system (that could be used only with staff approval) that would take only two weeks to install and that would heat the *corbicula* to 109.4°F until 100 percent of them are dead, prior to removing a portion of them with a shovel. *Id*. at 7-10. There is no genuine issue of fact about the adequacy of this system.

In addition, we note that applicant will use a maintenance inspection system to monitor for *corbicula* in the "non-safety, non-essential systems like the Service Water System and Circulating Water System, both of which use raw water from Lake Erie." *Id*. at 6. OCRE has not provided us with any basis for believing that there is any special risk that would result from infestation of *corbicula* in these non-safety-related systems, but we are confident that detection of *corbicula* through the applicant's maintenance inspection system would permit applicant and staff to have enough time to solve the problem. If, as seems unlikely, they are unable to solve the problem and find that it has safety importance, then there would be no safety problem involved in shutting Perry down until the problem could be solved.

For these reasons, we find that there is no genuine issue of fact concerning the *corbicula* contention.

IV. SCRAM DISCHARGE CONTENTION

Issue #5 states that:

> Applicant has not demonstrated the safety of its reactor from an unrecoverable loss of coolant accident, which could occur from a pipe break in the scram discharge volume. *See* NUREG-0785.

This contention was admitted to the proceeding without objection from the applicant. It has been the subject of discovery. At the conclusion of discovery, staff moved for summary disposition of this contention. OCRE has not opposed the granting of summary disposition. (OCRE Response, December 3, 1982.)

We commend the parties for their responsible litigation of this contention. Applicant may be commended for admitting this contention into the proceeding; it recognized that OCRE had stated an adequate basis for its admission. OCRE may be commended, generally, for its energy and conscientiousness in pursuing its concerns. In this instance, it may be commended for recognizing that the concerns about the scram discharge volume that prompted it to submit this contention are not applicable to the Perry containment. Responsible conduct of this sort by the parties to this case lends additional weight to the arguments they will present to us on the contentions which remain in the proceeding, and it also will give the Board additional time to attend to those concerns. In that way, the parties and the Board will focus their attention on significant safety and environmental issues and will avoid wasting hearing time on uncontested or unimportant issues.

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This contention concerned the possibility that a break in piping that is in the "scram discharge system" could cause a small-break loss-of-coolant accident. Proper understanding of the contention requires familiarity with the basic operation of a boiling water reactor.

In a boiling water reactor (BWR), the reactor core is immersed in water within a pressure vessel. When the core generates heat, turning water to steam, the steam leaves the top of the core and is directed to the turbine-generators, to make electricity. For the sake of efficiency, the space near the top of the reactor vessel contains equipment for drying the steam. So, unlike a pressurized water reactor, control rods that absorb neutrons and control the nuclear reaction may not be inserted from the otherwise utilized space at the top of the pressure vessel.

Instead, in a BWR, control rods are inserted from the bottom of the pressure vessel, using a hydraulic system to drive the rods up into the reactor. When rods are rapidly driven up to absorb enough neutrons to shut the reactor down, this is called a scram. During the occurrence of a scram, the pistons in the hydraulic system are driven upward, in order to drive the control rods into place. Since the upper chamber of each piston is filled with water, a valve (scram outlet valve) in that chamber must open to drain the fluid from the top of the piston and permit the piston to move upward. Thus, when a scram is taking place, water is forced into a system called the scram discharge volume (SDV). Then, even after the control rods are fully inserted (with the scram valves left open) reactor coolant continues to flow through the scram outlet valves, pressurizing the scram discharge volume to full reactor pressure. Therefore, during and immediately following a scram, the SDV system becomes the reactor coolant retaining boundary.

Staff concern about such an event was expressed in Stuart D. Rubin, "Safety Concerns Associated with Pipe Breaks in the BWR Scram System" (March 1981). Mr. Rubin stated:

> After completion of a scram, . . . the SDV system having fulfilled its scram capability function, assumes a reactor coolant boundary function and a primary containment isolation function. It is during this fully pressurized state of the SDV system that we have examined the potential safety concerns associated with a break in the SDV system piping. The pipe break is postulated to be a high energy break in any size line in the system and initiated by the pressure, temperature and other loadings attendant to the reactor scram but not, necessarily, considered in the mechanical design basis of the SDV system.

Id. at 3. Staff was concerned that were there a break in the SDV, the scram outlet valves have not been designed to be safety-grade and could not be counted on to close. The consequence is that the pipe break would continue to cause leakage from the primary system. Initially, this leakage would not cause core uncovery because it is well within the capacity of the safety-grade, redundant water-makeup systems included in the reactor design. However, water would continue to pour from the ruptured scram discharge volume, causing an accumulation of water in the containment and eventually causing the water level to rise until it threatened to flood and disable the pumps used in the water-makeup systems. This could interfere with the continuing ability to remove heat from the core and to prevent core damage. *Id.* at i-ii and *passim*.

Staff and applicant agree that in a Mark III containment, found at Perry, these staff concerns are not applicable. They tell us that a break in the scram discharge volume piping would cause water to flow into the suppression pool, where it would be available for use by the Emergency Core Cooling System, thus setting up an internal water cycle that would not flood any part of the containment. Supporting affidavit of Nicholas E. Fioravante at 2. Additionally, the water-makeup systems are located in individual watertight compartments in the auxiliary building, outside of the primary containment. *Id.* at 3. Hence, there is no risk to necessary pumping equipment if a pipe break were to occur.

Additionally, we take comfort from applicant's assurances that the piping in the scram discharge system is treated as a Class 2 component under the American Society of Mechanical Engineers (ASME) Code and is evaluated as Seismic Category I piping. Applicant's supporting affidavit by Monty A. Ross (December 3, 1982) at 3. The entire SCRAM discharge system is inspected periodically under Section XI of the ASME Code. *Id.* at 5. Operational experience also suggests that these systems, which have been in operation for more than 390 reactor-years of experience, have not been subject to reported incidents of pipe cracks, leaks or ruptures. *Id.*

We conclude that there is no serious safety problem relating to problems in the scram discharge volume at Perry and we therefore approve of OCRE's action in not opposing summary disposition. The motion shall be granted.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 22nd day of December, 1982,

ORDERED

(1) The following are found to be genuine issues of fact and shall be contested at public hearing:

> The existence, cause, severity, duration and extent of an alleged instance in which applicant's quality assurance program failed by not properly controlling its electrical contractors.
>
> Whether the alleged deficiencies in properly controlling electrical contractors extend to the proper control of other contractors.
>
> Whether deficiencies in the control of contractor activities have resulted in unsafe conditions at Perry.

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> Whether applicant has an adequate system for periodically reviewing its program for assuring the quality of contractor performance and ascertaining and correcting deficiencies that have arisen, particularly in systems essential to safe plant operation.

(2) Except to the extent specified in paragraph (1) of this Order, Summary Disposition is granted with respect to issues 3 (Quality Assurance), 5 (Scram Discharge Volume Piping) and 7 (Asiatic Clams).

THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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Cite as 16 NRC 1923 (1982) LBP-82-115

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris

In the Matter of **Docket No. 50-322-OL**
(Emergency Planning)

LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1) **December 22, 1982**

The Licensing Board issues an order confirming its previous oral rulings finding intervenors to be in default of a previous board order, and stating its reasons for concluding dismissal of intervenors' onsite emergency planning contentions to be an appropriate sanction.

LICENSING BOARDS: AUTHORITY TO REGULATE PROCEEDINGS

A licensing board is not expected to sit idly by when parties refuse to comply with its orders. Pursuant to 10 CFR §2.718, a licensing board has the power and the duty to maintain order, to take appropriate action to avoid delay and to regulate the course of the hearing and the conduct of the participants. Furthermore, pursuant to 10 CFR §2.707, the refusal of a party to comply with a Board order relating to its appearance at a proceeding constitutes a default for which a licensing board "may make such orders in regard to the failure as are just."

LICENSING BOARDS: DISCRETION IN MANAGING PROCEEDINGS; SANCTIONS

A spectrum of sanctions, from minor to severe, is available to licensing boards to assist in the management of proceedings. In selecting a sanction, boards should consider the relative importance of the unmet obligation, its potential for harm to other parties or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of a pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances. Boards should attempt to tailor sanctions to mitigate the harm caused by the failure of a party to fulfill its obligations and bring about improved future compliance. *Statement of Policy on the Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981); *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400, 1416-20 (1982).

RULES OF PRACTICE: CONDUCT OF PARTIES

A licensing board is to be accorded the same respect as a court of law. *See* 10 CFR §2.713(a).

RULES OF PRACTICE: REFUSAL TO COMPLY WITH ORDER

A party may not simply refuse to comply with a board order, even if it believes the board decision to have been based upon an erroneous interpretation of the law. Appropriate sanctions may be imposed for a refusal to comply with a board order, and a party may not be later heard to complain that its rights were unjustly abridged after having willfully refused to participate further in a matter. *Northern Indiana Public Service Company* (Bailly Generating Station, Nuclear-1), ALAB-224, 8 AEC 244 (1974). Except in the most extraordinary circumstances, a party must comply with an order unless and until it is either stayed or overturned on appeal.

RULES OF PRACTICE: FAILURE OR REFUSAL TO PROSECUTE CONTENTIONS

An intervenor's intentional waiver of both its right to cross-examine and its right to present witnesses with regard to certain contentions amounts to the effective abandonment of those contentions, in that the party has thus refused to prosecute whatever case it might otherwise have been able to make. In the absence of circumstances which would justify a board's exercise of its *sua sponte* powers, an intervenor's abandonment of its contentions precludes the board's litigation of these matters in an operating license proceeding, as such issues are no longer "in controversy" among the parties so as to be litigable. *See* 10 CFR §2.760a.

MEMORANDUM AND ORDER
CONFIRMING RULING ON SANCTIONS FOR INTERVENORS' REFUSAL TO COMPLY WITH ORDER TO PARTICIPATE IN PREHEARING EXAMINATIONS

The purpose of this order is to confirm this Board's rulings on the record on November 23, 1982 and November 30, 1982 (Tr. 14,746-48; 14,753), finding intervenors Suffolk County (the County), the Shoreham Opponents Coalition (SOC) and the North Shore Committee Against Nuclear and Thermal Pollution (NSC) to be in default of our "Memorandum and Order Ruling on Licensing Board Authority to Direct That Initial Examination of the Pre-filed Testimony Be Conducted by Means of Prehearing Examinations," LBP-82-107, 16 NRC 1667 (1982), and to state our reasons for concluding that dismissal of "Intervenors' Consolidated Phase I Emergency Planning Contentions" is the appropriate sanction in these circumstances.

I. BACKGROUND

On November 19, 1982, this Board issued an order directing that the parties to the Shoreham operating license proceeding conduct their initial cross-examination, redirect and recross-examination of the previously filed written testimony on "Phase I" (primarily onsite) emergency planning contentions by means of public prehearing depositions. The transcripts of these prehearing examinations were to be filed with the Board, with the portions which each party sought to move into evidence noted thereon. The Board was to then resolve any procedural or evidentiary objections noted therein (and pursued at the time of filing the depositions), rule on the admissibility of the remaining proffered portions into evidence after their adoption by the witnesses at hearing, and preside over any follow-up questioning by the parties and the Board. Portions of the prehearing examinations were thus to become a part of the evidentiary record of this proceeding upon which this Board would base its initial decision. LBP-82-107, *supra*, 1670.

As we stated in that order, directing the use of prehearing examinations for these contentions would not limit the scope of the Board's attention to these matters; prior to hearing, the Board would have read the portions of these examinations

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moved into evidence. Instead, use of these prehearing examinations would have allowed the parties to conduct thorough cross-examination on the pre-filed testimony, and would have enabled both the Board and the parties to conduct much better focused follow-up questioning at the hearing before the Board on the specific matters in controversy. Therefore, use of this procedure would have given the parties the opportunity to compile a comparable record utilizing many fewer days of hearing time before the Board.

At the time we proposed that the parties use prehearing examinations for their initial cross-examination on Phase I Emergency Planning issues, this Board indicated its belief that it possessed the authority to direct that such examinations be held. Tr. 12,564. However, after the County questioned our authority in this regard, we believed it appropriate to allow the parties an opportunity to file legal briefs on this issue to see if their interpretations of applicable statutes, regulations and precedents might establish otherwise. Tr. 12,566; 15,585-86.

During the period prior to the issuance of our November 19, 1982 order, beginning on November 2, 1982, the Board's purposes and plans for implementing this proposal were the subject of numerous on-the-record discussions with the parties. *See, e.g.*, Tr. 12,563-568; 12,576-80; 13,279-85; 13,368-72; 13,375-80; 13,420-21; 14,029-31; 14,538-42; 14,593-96; 14,679-88; 14,691-93. Furthermore, while lead intervenor Suffolk County has generally assumed the responsibility for communicating news of the events at these hearings to SOC and NSC, the Board issued an order specifically inviting these parties to comment on the procedures proposed by the Board. *See* "Memorandum Advising SOC and NSC of Proposal to Require Depositions and of Opportunity to File Views," November 9, 1982 (unpublished).

Even prior to the issuance of our November 19 order, however, the County indicated on several occasions that it would not comply with any order directing that such prehearing examinations be held. *See* "Suffolk County Response to Licensing Board Proposal of November 2, 1982," dated November 8, 1982; Tr. 14,594. We therefore indicated our belief that such a direct violation of a Board order would constitute a default requiring the imposition of appropriate sanctions. Tr. 13,284-85, 14,594-95. Furthermore, recognizing the procedure which we were proposing to be a novel one in NRC practice, we indicated on several occasions our willingness to support rapid appellate review of this issue, if intervenors requested that review, such that a prompt appeal might be taken prior to our issuance of an overall initial decision in this proceeding. Tr. 14,030-31; 14,595. *See also* Tr. 14,726-29.

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After due consideration of the filings provided by the parties to this proceeding,[1] this Board issued its "Memorandum and Order Ruling on Licensing Board Authority to Direct That Initial Examination of the Pre-filed Testimony Be Conducted by Means of Prehearing Examinations," LBP-82-107, 16 NRC 1667 (1982). That order affirmed the Board's conclusion that it has the authority to order such a procedure and directed that such examinations be conducted by the parties in accordance with the procedures described therein. The rationale and legal support for our authority to order the prehearing examinations is set forth in the November 19 order and therefore need not be repeated at length at this time. In sum, contrary to intervenors' unsupported assertions, we found that the use of prehearing examinations would enhance, rather than erode, intervenors' hearing rights.

In light of the County's preliminary indications that it would intentionally disobey any Board order directing the use of prehearing examinations for the initial exaninations, and in light of our preliminary discussions with and warnings to the County about the probable consequence of any intentional default, our November 19 order included the following provision:

> I. Any party which chooses to default on the obligations imposed by this order and to not take part in the prehearing examinations will be deemed to have waived its right to conduct cross-examination. Similarly, as the Board intends that the prehearing examinations serve as the principal forum for cross-examination, redirect and recross on these contentions, any party which does not pursue its obligations in good faith may be held to have waived its right to ask follow-up questions before the Board. Any party which refuses to produce any of its witnesses for the prehearing examinations will be deemed to have abandoned its right to present the subject witness and testimony. Depending on the extent of any default, the total result could be an effective abandonment of the issue in controversy. 16 NRC 1682-83.

A conference of counsel was held on Long Island on November 23, 1982 to answer any requests for clarification and to discuss implementation of the Board's November 19 order. Counsel for both the County and SOC indicated that their clients would not participate in the prehearing examinations which the Board had ordered; this included refusals to make their witnesses available and to conduct cross-examination of LILCO and NRC Staff witnesses. Tr. 14,725-31; 14,738-39. We therefore found SOC and the County to be in default of our November 19 order and directed that those of "Intervenors' Consolidated Phase I Emergency

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[1] Of the filings submitted by the intervenors, only that submitted by NSC attempted to discuss the Board's proposal through a discussion of legal precedent. While SOC and the County each stated legal conclusions contrary to the views later adopted by the Board, their filings were so lacking in supporting legal argument that the Board was prompted to ask the County on the record whether some further filing of its legal views might be expected. Tr. 13,279. The County indicated it intended to make no additional filing. *Id.; see also* Tr. 14,031; 14,079-86.

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Planning Contentions" admitted by our July 20, 1982 Prehearing Conference Order (unpublished) and September 7, 1982 Supplemental Prehearing Conference Order, LBP-82-75, 16 NRC 986, and not otherwise settled between the parties (Tr. 14,717-19), be dismissed as to those two parties. Tr. 14,746-748.

Counsel for NSC was unable to attend this conference of counsel, but indicated in a letter to the Board dated November 24, 1982, that NSC also would not participate in the prehearing examinations ordered by the Board. We therefore ordered that "Intervenors' Consolidated Phase I Emergency Planning Contentions" be dismissed as to NSC as well. Tr. 14,753.

II. APPROPRIATE SANCTIONS FOR A DEFAULT

A licensing board is not expected to sit idly by when parties refuse to comply with its orders. Pursuant to 10 CFR §2.718, a licensing board has the power and the duty to maintain order, to take appropriate action to avoid delay and to regulate the course of the hearing and the conduct of the participants. Furthermore, pursuant to 10 CFR §2.707, the refusal of a party to comply with a Board order relating to its appearance at a proceeding constitutes a default for which a licensing board "may make such orders in regard to the failure as are just."

The power of a licensing board to maintain order and regulate the course of a proceeding were given further explication by the Commission in its *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981):

> When a participant fails to meet its obligations, a board should consider the imposition of sanctions against the offending party. A spectrum of sanctions from minor to severe is available to the boards to assist in the management of proceedings. For example, *the boards could warn the offending party that such conduct will not be tolerated in the future*, refuse to consider a filing by the offending party, *deny the right to cross-examine or present evidence, dismiss one or more of the party's contentions*, impose appropriate sanctions on counsel for a party, or, in severe cases, dismiss the party from the proceeding. In selecting a sanction, boards should consider the relative importance of the unmet obligation, its potential for harm to other parties or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of a pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances. Boards should attempt to tailor sanctions to mitigate the harm caused by the failure of a party to fulfill its obligations and bring about improved future compliance. (Emphasis added.)

We believe the sanctions which we have imposed in response to intervenors' willful and total refusal to comply with our November 19 order to be appropriate in the present circumstances.

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As read by the Appeal Board in *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400, 1416-20 (1982), the Commission's Policy Statement requires that a board apply a four-factor test in determining the appropriate sanctions to be imposed for a default: (1) the relative importance of the unmet obligation and its potential for harm to other parties or the orderly conduct of the proceeding; (2) whether the default is an isolated incident or a part of a pattern of behavior; (3) the relative importance of the safety or environmental concerns raised by the party; and (4) all of the circumstances.[2]

A.

In the proceeding before us, we believe the obligation with which intervenors have intentionally refused to comply to be extremely important to both the pace of this proceeding and to the procedural due process rights of the other parties. Based upon the time estimates for cross-examination, redirect and recross on Phase I emergency planning matters submitted by the parties at the Board's request,[3] our review of the prefiled written testimony and the pace of previous cross-examination and follow-up questions by the parties and the Board, we believe litigation of these contentions before the Board likely would have consumed about thirty hearing days. In contrast, after approximately twenty-five days of prehearing examinations on these contentions, we believe that follow-up questions before the Board would have been completed in approximately eight hearing days. Furthermore, the prehearing examinations would have taken place from the end of November, 1982 into January, 1983, while the Board was engaged in hearing evidence on other issues. Therefore, the use of these examinations would have saved almost two calendar months of hearing time at the end of the hearing which could be devoted to preparation of an initial decision on all issues (except for the

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[2] While we are of course bound by and follow this Appeal Board precedent, it is not clear to us that by its Policy Statement the Commission intended to establish a four-factor test for the selection of sanctions comparable to the five-factor test used under 10 CFR §2.714(a) to balance the equities of allowing the admission of late-filed contentions. Indeed, as the fourth prong of the *Byron* test, "all of the circumstances," appears to clearly subsume the first three factors enumerated above, we would view the Commission's policy statement as merely enumerating three of the many factors which *may* be relevant in determining what sanctions are appropriate in a particular situation. We believe that requiring a Board to consider "all of the circumstances" prior to its selection of a sanction is another way of restating the language of 10 CFR §2.707(b) empowering a licensing board to "make such orders in regard to the failure as are just."

[3] *See* November 8, 1982 letter to Board from counsel for LILCO transmitting chart showing LILCO and NRC Staff time estimates for cross-examination on Phase I emergency planning issues; November 15, 1982 letter to Board from Counsel for County transmitting intervenors' joint time estimates for "cross-examination and re-direct examination on Phase I emergency planning issues in any future public hearings before the Board."

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subject of Phase II offsite emergency planning, for which issues are not scheduled for admission or litigation at this time).[4]

Intervenor's refusal to comply with the Board's November 19 order would also prejudice the procedural due process rights of both the Applicant and NRC Staff. Intervenors' refusal to make their witnesses available for prehearing examinations would limit the rights of the other parties to conduct cross-examination on intervenors' prefiled testimony, except upon such terms as unilaterally suit intervenors. This refusal, coupled with intervenors' refusal to cross-examine at prehearing examinations, essentially puts LILCO and the Staff in the position of having to address contentions which intervenors have refused to prosecute, and refused to allow the Staff and Applicant to defend against, in the manner directed by the Board.

Futhermore, we believe the refusal of intervenors to comply with our direction deprives all parties of the benefits of the procedure which we described in our November 19 order. As we stated at that time, the parties each would have been able to cross-examine broadly at the prehearing examinations, trying many different avenues of questioning. Therefore, in their follow-up questioning before this Board, all parties would have had the opportunity to conduct focused and incisive examination on those aspects of the contentions which they believe to be most material and most likely to prove fruitful in making their case, having had the benefit of time to fully review the answers given to their previous questions and having had the chance to better evaluate the relative positions of the parties on the issues.

The most critical result of intervenors' decision to default on their obligations under our November 19 order, however, is the impact which allowing such behavior to go unchecked would have upon the orderly conduct of these proceedings. Put in its most basic terms, a party may not simply refuse to comply with a direct Board order, even if it believes the Board decision to have been based upon an erroneous interpretation of the law.[5]

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[4] The use of prehearing examinations for parties' initial cross-examination, redirect and recross-examination of witnesses' prefiled direct testimony is not the only procedural method which we have adopted to attempt to increase the efficiency of both the Board's and the parties' use of time. On November 30, 1982, we directed that the parties file their proposed findings on all contentions litigated prior to the September 14, 1982 commencement of the current litigation of QA/QC matters. Tr. 14,789-91. LILCO is to file its findings by January 10, 1983. Intervenors are to jointly submit their findings by January 20, 1983, and the Staff's findings will be due by January 31, 1983. LILCO's reply findings will be due by February 7, 1983. We believe our adoption of this procedure will permit the Board to commence its preparation of its initial decision promptly after litigation of all remaining issues, rather than having to wait two months before receiving proposed findings on any issue from the parties.

[5] A licensing board is to be accorded the same respect as a court of law. *See* 10 CFR §2.713(a). Should a litigant in a U.S. District Court disagree with the legal conclusions reached in an order of the court, his only remedy is to appeal that order; should he refuse to comply with the order, he is subject to sanctions for contempt of court. He may not later base an appeal of the contempt order on the alleged invalidity of

(Continued)

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To allow intervenors to decline to follow our order, solely because they disagree with it, would be a particularly egregious abdication of our duty under 10 CFR §2.718 to regulate the course of this proceeding. Not only would permitting such actions be contrary to Commission precedent, but it would also likely be repeated were sanctions not imposed for this breach so as to induce future compliance with Board orders.

B.

On the whole, intervenors in this proceeding, primarily through lead intervenor Suffolk County, have met and responded to the obligations and orders imposed by this Board. Indeed, intervenors' default in this matter is not as repetitive as the multiple defaults of the intervenors in *Byron*, which the Appeal Board held did not constitute a "pattern" of recalcitrance. 15 NRC at 1418.

We note for the record, however, that Suffolk County's decision, made prior to our November 19 order, to take no part in any prehearing examinations which might be ordered by the Board resulted in its refusal, at least initially, to provide the Board with intervenors' estimates as to the amount of time which they would require to conduct their cross-examination on Phase I emergency planning matters. While these time estimates were originally due on November 8, 1982 (Tr. 12,577), Suffolk County filed on that date only its above-mentioned pleading stating its opinion that the Board-proposed prehearing examinations were illegal and that the Suffolk County Executive had directed that the County's counsel and witnesses not take part in any such proceedings. Thereafter, the Board warned the County that it deemed intervenors' refusal to provide the time estimates to be a default, independent of our ultimate resolution of whether we had authority to order the prehearing examinations. We further warned that the Board would have to consider the imposition of appropriate sanctions for this default if the County did not take advantage of a second chance permitted by us for the County to supply its time estimates by November 15, 1982. Tr. 13,368-72.

Subsequently, on November 15, 1982, the County provided the Board with its time estimates for cross-examination and redirect examination on the Phase I Emergency Planning Contentions. These time estimates, however, were stated to be for "any future public hearings before the Board." Thus, while intervenors' refusal to comply with our November 19, 1982 order cannnot be said to be a part of an overall pattern of recalcitrant behavior by the County in this proceeding, there is

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the initial order, at least where the party has had the opportunity to challenge the decree on appeal, and when the order is not so vague that the party had no notice that its conduct would be considered contemptuous. *NLRB* v. *Union Nacional De Trabajadores*, 611 F.2d 926, 928 n.1 (1st Cir. 1979) (civil contempt); *Walker* v. *City of Birmingham*, 388 U.S. 307 (1967); *United States* v. *Dickinson*, 465 F.2d 496, 509-511 (5th Cir. 1972) (criminal contempt).

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no doubt that the County's decision not to participate in the prehearing examinations had deleterious effects upon its compliance with our other orders relative to this phase of this proceeding.

We further note that our oral rulings dismissing intervenors' Phase I emergency planning contentions may have had a remedial effect on the County's initial indications that it would also refuse to participate in prehearing examinations, similar to those previously proposed by the Board, for the litigation of matters relevant to the Torrey Pines report on the independent verification of the Shoreham Nuclear Power Station. Prehearing examinations on the prefiled direct testimony on this issue are to be held on December 27-30, 1982 and January 3, 1983. Transcripts of these examinations are then to be marked by the parties jointly to show those portions which each party desires to move into evidence. The Board will rule on the admissibility of the indicated portions on January 10, 1983. Follow-up questions of the witnesses by the parties and the Board will also commence on that date. The Board may proceed similarly in the future for the litigation of Phase II (offsite) emergency planning matters.

C.

As interpreted by the Appeal Board in *Byron*, the third factor which the Commission's Policy Statement requires a licensing board to consider when assessing sanctions is "the importance of the safety or environmental concerns raised by the party." On the facts presented in *Byron*, however, the Appeal Board concluded that this factor was "not at all decisive" in determining whether the licensing board had erred in dismissing a party for failing to comply with a discovery order, since the Appeal Board at that time had "little but the bare contentions upon which to rely." 15 NRC at 1419. In the view of the Appeal Board, "[t]his factor is of more importance during the later stages of a proceeding when the contentions have been fleshed out (presumably through discovery) and parties have submitted testimony." *Id.*

While the Commission's Policy Statement speaks to the "importance of the safety and environmental concerns raised by the party," the Appeal Board's brief discussion of this factor does not weigh what it describes as "the abstract importance" of the individual issues raised by that intervenor; instead the Appeal Board addresses whether there is "some basis for believing" that the dismissed intervenor in that proceeding might contribute to the proceeding, based on affidavits submitted by that intervenor's experts. *Id.*

While the procedural posture of the proceeding before us is considerably more developed than it was in *Byron*, we too feel that we can conclude little more than that there does appear to be "some basis for believing" that intervenors' participation might contribute to the litigation of the Phase I Emergency Planning issues. We are aware that pursuant to our previous prehearing conference orders, the parties have conducted extensive formal and informal discovery on these issues, in the form of informational meetings and negotiations, as well as depositions and requests for documents. Furthermore, the County filed testimony of its expert witnesses on a number of the Phase I emergency planning contentions. As the intervenors indicate their intention to proceed on other contentions solely by way of cross-examination, however, we know of no way to assess the contribution which they would have made on those issues at this juncture.

We think it most pertinent to any assessment of the potential contribution of the intervenors in this proceeding, however, to note that the very default which is the subject of this order is intervenors' willful refusal to come forward and make their contribution to this proceeding through the prehearing examinations. We believe intervenors' effective abandonment of their Phase I contentions precludes our litigation of these matters in intervenors' absence; in an operating license proceeding such as this, we are only permitted to litigate matters "in controversy" among the parties. 10 CFR §2.760a. Intervenors have refused to allow their contentions to be placed "in controversy" pursuant to our November 19 order.

Nor do we find the issues raised by intervenors' Phase I contentions to be appropriate for *sua sponte* consideration in the present circumstances. This is so even though we are aware that LILCO and the Staff appear to have not yet resolved all differences between them as to these issues. We observe, however, that each of the Phase I issues raised by intervenors, such as the question of LILCO's ability to augment its onsite staff within 30 minutes of the declaration of an emergency in order to meet the Staff's conditions of Table B-1 of NUREG-0654, is a matter which the NRC Staff must review and approve as a prerequisite to any loading of fuel at Shoreham. The Staff is aware of all matters raised in intervenors' prefiled testimony. We presume that the Staff's review of onsite matters will address these issues whether or not they are raised in litigation before this Board. Tr. 14,748.

D.

The fourth matter which we must address under the Commission's Policy Statement and the *Byron* decision is "all of the circumstances." This includes the attempt to tailor the choice of sanctions to mitigate the harm caused by a party's failure to fulfill its obligations and to bring about improved future compliance.

As we have already recited at length the nature of intervenors' refusal to comply with our November 19, 1982 order and the serious challenge to this Board's ability to regulate the course of this proceeding which their default represented, we will not discuss those matters again here.

We wish to note, however, that our purpose in setting forth potential sanctions in our November 19 order was wholly remedial. In view of the intervenors' stated intention to default from participation in any Board-ordered examinations, we had hoped and intended that the threat of sanctions such as these might have induced

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intervenors to comply with our order. In light of intervenors' previous default in not providing their cross-examination time estimates when first ordered by the Board, we believed it appropriate to warn intervenors, in accordance with the guidance on sanctions set forth in the Commission's Policy Statement, 13 NRC at 454, that such conduct would not be tolerated in the future.

Furthermore, in drafting the sanctions which we warned would be imposed for default of our November 19 order, we attempted to fashion sanctions which would not only tend to induce compliance with our order, but which would also be flexible, so as to allow for the variation of the specific sanctions to be imposed depending upon the nature and extent of any default.[6]

Based upon the facts of the present proceeding, we believe our decision to hold a party to have waived its right of follow-up cross-examination before the Board if it defaults on its responsibility to conduct cross-examinations at the prehearing examination to be properly tailored to mitigate the particular default and to be supported by Commission precedent.

The Appeal Board's opinion in *Northern Indiana Public Service Company* (Bailly Generating Station, Nuclear-1), ALAB-224, 8 AEC 244 (1974) is instructive on this point. In *Bailly*, the licensing board had required that the intervenors commence their cross-examination of the Applicant's and the Staff's witnesses on a given date. Although intervenors had already received much information through discovery from the Applicant, they objected to going forward at the time proposed by the Board since the Staff had still not produced certain information which intervenors had requested through discovery.

Rather than postpone its evidentiary hearing until the Staff could produce the requested materials, the Board ruled that intervenors should initiate cross-examination on the specified date, but that they would be given an opportunity to recall and cross-examine the Applicant's and the Staff's witnesses, to present new evidence, and to add new contentions after they had received and reviewed the documents sought from the Commission. "In short, the Licensing Board was willing to afford intervenors 'two bites of the apple.' . . ." 8 AEC at 250.

The Board directed, however, that should intervenors decline to conduct their cross-examination as ordered by the Board, they would be deemed to have waived their opportunity to cross-examine these witnesses on the matters then in issue. The intervenors chose literally to walk out of the hearing and the Board later refused to allow them to cross-examine the Staff's and Applicant's witnesses on these matters. The intervenors subsequently appealed this ruling, asserting that they had been denied procedural due process. *Id.*

In upholding the licensing board's sanction under 10 CFR §2.707, the Appeal Board stated:

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[6] The default provision of our November 19, 1982 order appears, *supra*, at 1927.

> Intervenors' conduct merited the sanction imposed by the Board. American jurisprudence has long passed the point where a party — particularly one represented by experienced counsel — may refuse to participate in a case because the presiding official ruled in a manner it did not like. There are appropriate ways of preserving objections to such rulings; going home is not one of them. A party may not be heard to complain that its rights were unjustly abridged after "[h]aving thus purposefully refused to participate." *Brotherhood of Railroad Trainmen* v. *Chicago, M., St. P. & P.R.R.*, 380 F.2d 605, 608-09 (D.C. Cir., per Burger, J.), *certiorari denied*, 389 U.S. 928 (1967). *See also, United States* v. *Taylor*, 333 F.2d 633, 639-40 (5th Cir. 1964); *Federal Power Commission* v. *Arizona Edison Co.*, 194 F.2d 679, 683-86 (9th Cir. 1952). 8 AEC at 251.

We believe a similar analysis applies in this proceeding. Intervenors simply refused to participate in the prehearing examinations, rather than proceeding as ordered by the Board and accepting the Board's offer to refer its ruling on the propriety of its November 19 order to the Appeal Board for expedited review, or *e.g.*, pursuing another alternative of seeking a stay of our order and directed certification before the Appeal Board. Indeed, intervenors had refused to participate in any Board-ordered prehearing examinations even before seeing the Board's legal analysis in support of our conclusion that such examinations can be required.

Intervenors continued to refuse to participate in any such examinations even when specifically offered an opportunity to turn back from their impending default after the issuance of our November 19, 1982 order. At the conference of counsel held November 23, 1982 to discuss the implementation of our order, we gave the intervenors an additional opportunity to agree to participate in the prehearing examinations while, if requested, we would refer our ruling to the Appeal Board. Even though all intervenors were aware of the sanctions which we had proposed for any party defaulting on its obligations under our order, each refused to comply.[7]

We also find our sanction deeming the refusal of any party to make its witnesses available to participate in the prehearing examinations to be an abandonment of its right to present the subject witness and testimony to be susceptible to a similar analysis to that employed in the *Bailly* decision, as applied by us above. In our view, intervenors' intentional waiver of both their right to cross-examine and their right to present witnesses amounts to their effective abandonment of their Phase I

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[7] We also note that no party has sought a stay of these proceedings from this Board or the Appeal Board, pursuant to 10 CFR §2.788, pending the outcome of an interlocutory appeal of our November 19 order. Either our referral of that order to the Appeal Board or the Appeal Board's directed certification of that ruling would not have stayed the effectiveness of that decision, unless otherwise ordered. 10 CFR §2.730(g). Had intervenors requested this Board to stay our November 19 order, we do not believe we would have granted it, as we do not believe intervenors could have met the standards enumerated in section 2.788(e) for the grant of a stay.

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contentions, in that they have refused to prosecute whatever case they might otherwise have been able to make.

As the Phase I emergency planning contentions have been effectively abandoned by intervenors, they are no longer "in controversy" among the parties. Accordingly, in the absence of any issue which we would raise *sua sponte*, there are no Phase I Emergency Planning Issues remaining before us for litigation.

It is therefore

ORDERED that intervenors have waived their rights to cross-examine and to present witnesses on "Intervenors' Consolidated Phase I Emergency Planning Contentions" by their refusal to comply with our November 19, 1982 order; and

ORDERED that "Intervenors' Consolidated Phase I Emergency Planning Contentions" are hereby dismissed, with prejudice, due to intervenors' refusal to prosecute them.

THE ATOMIC SAFETY AND
LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Dr. James H. Carpenter, Member
ADMINISTRATIVE JUDGE

Dr. Peter A. Morris, Member
ADMINISTRATIVE JUDGE

Bethesda, Maryland
December 22, 1982

Cite as 16 NRC 1937 (1982) LBP-82-116

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James L. Kelley, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Foster

In the Matter of

Docket Nos. 50-413
50-414
(ASLBP Docket No. 81-463-01-OL)

DUKE POWER COMPANY, ***et al.***
(Catawba Nuclear Station,
Units 1 and 2)

December 22, 1982

The Licensing Board rules on various pending motions related to discovery.

RULES OF PRACTICE: DISCOVERY; CLAIM OF PRIVILEGE

A claim of privilege from disclosure, such as the attorney-client privilege, must be made with particularity, including clear identification of documents, or parts thereof, and why each identified document is privileged.

RULES OF PRACTICE: DISMISSAL OF CONTENTIONS

A contention is not subject to dismissal merely because the intervenor fails to respond in discovery by supplying its factual basis. The "basis" requirement of 10 CFR §2.714 is a pleading requirement which an intervenor can meet and not yet have any supporting factual basis.

RULES OF PRACTICE: DISCOVERY; FORM AND SPECIFICITY OF OBJECTIONS

A party is entitled to direct answers or objections to each interrogatory posed. General objections are insufficient. The burden is on the objector to show why the question is not proper.

RULES OF PRACTICE: DISCOVERY; RIGHT OF FIRST DISCOVERY

An intervenor advancing a truthful claim of lack of knowledge about its contention is entitled to a reasonable opportunity to develop its case on those contentions through discovery against the applicants and NRC Staff before it can be required to provide responsive answers in discovery.

RULES OF PRACTICE: BASIS FOR CONTENTIONS

Valid safety contentions do not invariably involve alleged noncompliance with a specific safety rule. A contention about a matter not covered by a specific rule need only allege that it poses a significant safety problem.

RULES OF PRACTICE: DISCOVERY; AUTOMATIC GRANT OF PROTECTIVE ORDER

A Licensing Board need not issue a ruling on a motion for a protective order unless a timely motion to compel is filed. In the absence of a timely motion to compel, the motion for protective order will be deemed granted.

MEMORANDUM AND ORDER

(Ruling on Various Discovery Disputes)

Several discovery motions are pending before this Board, including motions for protective orders, to compel responses, and for various sanctions. This Memorandum and Order will rule on those motions that are ripe for ruling and clarify certain principles to govern future discovery among the parties.

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A. Applicant and Staff Interrogatories to Palmetto on Contentions 8, 16 and 27

1. Procedural Development

The ten separate pleadings involved in this first dispute are described in the footnote.[1] We next provide a telescoped version of relevant events as a perspective for the issues presented.

The Applicants and the Staff served interrogatories and requests to produce on Palmetto concerning Contentions 8 (operator qualifications), 16 (spent fuel storage) and 27 (thermoluminescent dosimeters). Generally speaking, the interrogatories were of the type typically directed in a first set against an intervenor. These "boilerplate" questions sought more precise definitions of terms, the contention's legal theory, whatever evidence the intervenor possessed in its support, and related matters.

Palmetto filed responses and a motion for a protective order. However, all but a handful of Palmetto's answers to the Applicants were not in fact responsive. The most common answer was that "Intervenor at present lacks sufficient knowledge to answer." Palmetto did not provide any separate answers to the Staff's interrogatories. It stated that answers to the Staff, to the extent of its knowledge, were provided in its answers to the Applicants. Palmetto did not, however, identify which of those answers it had in mind.

Both the Applicants and the NRC Staff then filed motions to compel responses and for other relief. The Applicants also filed a separate response to the Palmetto motion for protective order. The matter was in this procedural posture at the second

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[1] Applicants' Interrogatories to Palmetto Alliance and Request to Produce Regarding Palmetto Alliance's Contentions 16 and 27, dated August 6, 1982.

NRC Staff's Second Set of Interrogatories and Document Production Requests to Palmetto Alliance, dated August 13, 1982.

Applicants' Interrogatories to Palmetto Alliance and Request to Produce Regarding Palmetto Alliance's Contention 8, dated August 16, 1982.

Palmetto Alliance Motion for Protective Order and Responses to Interrogatories, dated August 30, 1982.

Applicants' Motion to Compel or, in the Alternative, to Dismiss Contentions, dated September 9, 1982.

Applicants' Response in Opposition to Palmetto Alliance's Motion for Protective Order, dated September 9, 1982.

NRC Staff Motion to Compel Answers to Staff Interrogatories and Response to Palmetto Alliance Motion for Protective Order, dated September 15, 1982.

Palmetto Alliance Supplementary Responses to Applicants' and Staff's Interrogatories Regarding Palmetto Contentions 8, 16, and 27, dated November 5, 1982.

NRC Staff Motion for Sanctions Against Palmetto Alliance for Its Failure to Comply with Board-Ordered Discovery, dated November 11, 1982.

Applicants' Response in Support of "NRC Staff Motion for Sanctions Against Palmetto . . ." and Motion, in the Alternative, for Reconsideration and Dismissal of Palmetto Alliance's Contentions 8, 16 and 27, dated December 7, 1982.

Palmetto Alliance Response to Staff Motion for Sanctions, dated December 7, 1982.

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prehearing conference. At that time, the Board made oral rulings on the record granting the Applicants and Staff motions to compel responsive answers to their interrogatories. In the alternative, we allowed Palmetto a further opportunity to file particularized, interrogatory-by-interrogatory, objections. We deferred ruling on privilege claims with respect to certain document production requests. Tr. 611-613, 628-632. Unfortunately, we did not explicitly direct separate answers for the Staff's interrogatories, or at least a clear indication of which answers to the Applicants were thought by the Staff to be responsive.

In response to the Board's rulings, Palmetto then filed certain supplementary responses to the Applicants' interrogatories. Palmetto made it clear that it was not raising objections to any of the Applicants' questions on relevance grounds. (By implication, it does not object to the Staff's similar questions.) Palmetto does insist, however, on its "right to say 'we don't know' at this stage of litigation." Except for a few examples, Palmetto again failed to supply identifiable answers to the Staff's interrogatories.

Finally, the Staff filed a motion for sanctions against Palmetto for failure to comply with Board-ordered discovery. Arguing that Palmetto's supplementary responses are still inadequate, the Staff calls for dismissal of Palmetto Contentions 8, 16 and 27. Thereafter, the Applicants filed a lengthy memorandum in support of the Staff's motion for sanctions or, in the alternative, for reconsideration and dismissal of Contentions 8, 16 and 27.

2. *General Considerations*

The rules governing interrogatories — particularly 10 CFR 2.740 and 2.740b — provide most of the basic standards. In addition, there is some useful case law on the subject. The Appeal Board's *Susquehanna* decision (*Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 NRC 317 (1980)) bears directly upon some problems that have arisen in this case. The Appeal Board's recent *Byron* decision (*Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400 (1982)) and the Licensing Board decisions in *TMI Restart* (*Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), LBP-80-17, 11 NRC 893 (1980)) and *Pilgrim* (*Boston Edison Company, et al.* (Pilgrim Nuclear Generating Station, Unit 2), LBP-75-30, 1 NRC 579 (1975)) are also instructive. Copies of relevant portions of these decisions are attached for the parties' ready reference. Parts of the Commission's *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452 (1981), also attached, are pertinent, particularly on the question of sanctions. The guidance provided by these materials resolves most of the questions that have arisen in this case. We next discuss those questions in the order in which they arose.

3. *The Alleged Discovery "Offensive"*

In its responses and motion for protective order, Palmetto charges the Applicants and NRC Staff with launching a "discovery offensive" which "borders on . . . harassment" and which will "impede orderly litigation." Palmetto refers to the Applicants' first set of over 400 interrogatories to which they chose to respond. Since Palmetto did not make a timely objection, we see no reason to consider these interrogatories belatedly a part of an otherwise unsupported harassment claim. Palmetto complains that neither the Applicants nor the Staff provided any answers to its discovery requests. Palmetto neglects to mention, however, that the Board had frozen discovery on the contentions involved. Finally, Palmetto cites the present Applicant and Staff requests as "round two of this discovery offensive," noting that the Applicants have served 249 interrogatories and the Staff 28 in six parts. Numbers alone, however, do not determine the propriety of interrogatories. While a Board is authorized to impose a limit on interrogatories, the rules do not do so of their own force. Palmetto does not cite any specific defects in these interrogatories. As we noted above, they appear to be of a routine, boilerplate variety which are usually answered without much objection. In the absence of specific objections we have no occasion to review the propriety of these interrogatories individually.

We quote the only other point Palmetto makes in support of its harassment claim:

> To observe the obvious: it is not this Intervenor who is seeking to operate or license the Catawba Nuclear Station, it is not this Intervenor who is on trial, and it is not this Intervenor who controls the evidence relevant to the health, safety and environmental effects of the Catawba Nuclear Station's proposed operation. On the contrary it is the Applicants and NRC Staff who propose the action adversely affecting Palmetto's members and who, presumably control the evidence regarding the effects of its operation. Responses, pp. 2-3.

As we understand it, Palmetto is arguing that discovery burdens should fall primarily on the Applicants and Staff because they "control the evidence" and are "on trial" for a license for Catawba. But discovery is not a one-way street. To be sure, intervenors may rely on discovery more heavily than other parties to obtain evidence in support of their contentions. But discovery can be equally important to Applicants and the Staff for different purposes — to assess the intervenor's case and prepare for trial. As recognized by the Appeal Board in *Susquehanna:*

> We can find no fault in these circumstances with filing interrogatories designed to probe thoroughly the basis of the Coalition's case; it would have been imprudent not to have done so. The assertion that applicants' interrogatories were filed simply for harassment is not well taken; they reflect the number and complexity of the issues raised, not an abuse of the discovery process. 12 NRC 335.

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> To be sure, the license applicant carries the ultimate burden of proof. But intervenors also bear evidentiary responsibilities. In a ruling that has received explicit Supreme Court approval, the Commission has stressed that an intervenor must come forward with evidence "sufficient to require reasonable minds to inquire further" to insure that its contentions are explored at the hearing. Obviously interrogatories designed to discover what (if any) evidence underlies an intervenor's own contentions are not out of order. [footnotes omitted] 12 NRC 340.

The Palmetto harassment claim has no merit.

4. Palmetto's Assertions of Privilege for Documents

In its response and separately in its motion Palmetto asks protection from discovery for materials subject to the attorney-client privilege and the attorney work-product doctrine. Unfortunately, Palmetto does not go on to identify precisely which of the many listed documents are subject to those privileges and why that is the case for each such document. For the future, such a particularized claim will be required before a claim of privilege will be considered.

We do not understand that privilege is being claimed for any of the documents listed on the 2nd through 5th unnumbered pages of the document captioned "Requests for Documents" which was attached to Palmetto's August 30, 1982 filing. (In the future, all documents should be paginated.) These documents will be made available to the Applicants and Staff for inspection. The documents referred to in numbered paragraph 1 on page 1 of that document, described as "handwritten notes of Robert Guild" appear to be privileged. Based on that description and what we know of Mr. Guild's role in the case, a protective order is being entered covering them. Finally, as to the "handwritten notes of Michael Lowe," we do not know whether Mr. Lowe is an attorney, or any other facts that might justify protection from disclosure. If Palmetto seeks protection for these notes, it is to provide the Board with the necessary information within ten days following this order.

In conclusion on this point, we do not read Palmetto's somewhat vague claims of privilege as applicable at all to the specific interrogatories the Applicants and Staff have posed under Contentions 8, 16 and 27. In other words, we read their privilege claims as applicable only to the existing documents referred to on page 1 of its "Requests for Documents" response. In any event, whatever Palmetto's subjective intentions may have been, it has now waived any right it may have had to claim privilege on the interrogatories. Palmetto did not do so in its initial response and it did not do so when the Board gave them a second opportunity. As explained more fully below, all of those interrogatories must in due course be answered.

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5. *Applicants' Motion to Dismiss Contentions for Lack of Basis*

The Applicants' motion to compel responses contains an alternative motion to dismiss the pertinent contentions which would put Palmetto between a rock and a hard place. As the Applicants explain it (Motion at 14) —

> The foregoing discussion rests on the assumption that Palmetto Alliance does, in fact, possess the information sought in Applicants' discovery requests but that for some reason Palmetto Alliance has chosen to ignore its responsibilities in this proceeding by not disclosing it. If, however, Palmetto Alliance does not possess such information, then the Board should, upon reconsideration of its earlier decisions, dismiss those contentions. Applicants' basis for its request is that, Palmetto Alliance's responses demonstrate that it has no bases whatsoever for Contentions 8, 16 and 27. As such, Palmetto Alliance could not have satisfied previously the requirements of Section 2.714.

But the legal theory underlying the motion to dismiss is flawed — it equates the "bases" requirement in 10 CFR 2.714 with proof. The bases requirement is a *pleading* requirement; it concerns minimally acceptable *allegations*. An intervenor can meet that requirement and not have any evidence in support of it at that point. As the Appeal Board stated long ago in *Grand Gulf* —

> at the risk of undue repetition, we stress again that, in passing upon the question as to whether an intervention petition should be granted, it is not the function of a licensing board to reach the merits of any contention contained therein. Moreover, Section 2.714 does not require the petition to detail the evidence which will be offered in support of each contention. It is enough that, as here, the *basis* for the contention respecting the inadequacy of the consideration of alternatives to the construction of this plant *is identified with reasonable specificity* (emphasis added). *Mississippi Power and Light Company* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 426 (1973).

Palmetto has admitted in various responses that it presently has no evidence in support of the three contentions in question. It apparently plans to seek evidence primarily through discovery. Although that is not the only or necessarily the best approach to litigating these issues,[2] it is a permissible approach for an intervenor to take. Contrary to the Applicants' suggestion (Motion at 15-16) the Appeal Board's ALAB-687 decision is consistent with our position here. In the quoted language, read in context, that Board was speaking of fleshing out an impermissibly vague

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[2] Once basic information is disclosed in the FSAR and other Staff and applicant documents, some intervenors (including some with limited funds) seek out their own experts and develop an independent evidentiary case, without heavy reliance on discovery. We believe that that approach is more likely to bring useful information to light than fishing for declarations against interest through discovery.

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contention through discovery, which that decision proscribed, not of developing proof of an admitted contention that has already passed muster as sufficiently specific. Therefore we are denying the Applicants' alternative motion to dismiss.

6. *Form and Specificity of Objections*

The Staff's motion to compel answers, which we granted, makes some helpful points about form and specificity of objections. We agree with the Staff that it "is entitled to direct answers or objections to each and every interrogatory posed. 10 CFR 2.740b(b)." As to specificity, the Staff directed us to the *Pilgrim* case which stated the applicable rule as follows:

> [O]bjections should be plain enough and specific enough so that the court can understand in what way the interrogatories are claimed to be objectionable. . . . [G]eneral objections are insufficient. . . . [T]he burden of persuasion is on the objecting party to show that the interrogatory should not be answered — that the information called for is privileged, not relevant, or in some other way not the proper subject of an interrogatory. [footnote omitted] 1 NRC 583.

7. *The "We Don't Know" Response*

Which brings us to the hard part of this dispute. We granted the Applicant and Staff motions to compel at the prehearing conference largely because of Palmetto's failure to provide responsive answers to all but a few of these seemingly legitimate questions, and our belief that some useful information might be forthcoming. Palmetto's supplemental responses, however, contain very little useful additional information. (In view of our disposition of these matters at this stage, a response-by-response analysis is not necessary.)

As we understand Palmetto, its basic position is that it simply "doesn't know" the answers to these interrogatories "at this stage of litigation." Palmetto Supplementary Responses at 1. Acknowledging the legitimacy of the areas of inquiry, Palmetto also apparently acknowledges its obligation to answer these interrogatories fully prior to hearing. As a practical matter, this means that Palmetto must first be given a reasonable opportunity for discovery against the Applicants and Staff before responsive answers can be required of them.

The Applicants and Staff disagree. As the Staff puts it, the information they seek "should be within the knowledge of the party who sponsored the contentions"; this is information "which Palmetto should have *now* [emphasis added]." Staff Motion at 3-4. Neither the Staff nor the Applicants directly address the idea that an intervenor may, upon a plea of ignorance, have discovery first before he can be required to answer standard interrogatories responsively.

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Palmetto's quotation from the Appeal Board in *Susquehanna* supports its position and makes a basic point about discovery: "Assuming truthfulness of the statement, lack of knowledge is always an adequate response."[3] It is also significant that under the Rules of Practice, discovery begins on admitted contentions after the first prehearing conference. 10 CFR 2.740(a)(1). Although the rule on summary disposition motions (10 CFR 2.749) does not establish a fixed filing time (leaving that to the presiding officer), it is customary to file such motions well after discovery has commenced. Against the backdrop of these regulations, the Appeal Board had provided the following perspective of the regulatory scheme —

> In sum, the rejection of Mr. Potthoff's contention VI, and the resultant denial of his intervention petition, rested upon a misconception respecting the time at which, under the Commission's Rules of Practice, petitioners for intervention must establish the existence of some factual support for the particular assertions which they have advanced as the basis for their contentions. This demonstration need not be undertaken as a precondition to the acceptance of a contention for the limited purpose of determining whether to allow intervention under 10 CFR 2.714. Rather the obligation arises solely (1) in response to a subsequent motion of another party seeking to dispose summarily of the contention under 10 CFR 2.749 for want of a genuine issue of material fact; or (2) in the absence of such a motion, at the evidentiary hearing itself. *Houston Lighting and Power Company* (Allen's Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 551 (1980).

As we read the regulations and decisions, they are consistent with allowing Palmetto a reasonable opportunity to develop its case on these contentions through discovery, before it is required to provide responsive answers in discovery. The regulations and decisions are inconsistent with the claim that Palmetto must provide those answers now.

We reach these conclusions somewhat reluctantly and mainly because they appear to be required. In giving an intervenor a limited "right of first discovery," we are keenly aware of departing from the usual practice of concurrent and reciprocal discovery, and of creating a potential for undue delay. Moreover, we question whether an intervenor who claims near total ignorance of its own contention can realistically expect to learn much more if its sole reliance is on putting questions to an adverse party.

Furthermore, we have difficulty accepting at face value some disclaimers of knowledge about contentions. While we might accept a "don't know" response to a question calling for proof of a contention, it is more difficult for us to credit such a response to a question about the legal theory of a contention — *e.g.*, which NRC regulation is violated by the contention? The contentions were, after all, formulated with the regulations on the table and with considerable information available to the Intervenors. In those circumstances, Palmetto must have had *some* legal theory in mind. (On the other hand, it is possible that a better legal theory for a contention will evolve as evidence is acquired through discovery.) With these considerations in mind, we could go through the interrogatories and responses and order further answers on certain ones, or perhaps impose some sanction for failing to respond. But that approach is impractical — as our order at the prehearing conference and Palmetto's response to it have shown — where an intervenor claims a pervasive lack of knowledge on standard interrogatories.

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[3] To be sure, such a response may have serious consequences in a non-discovery context — *e.g.*, it may pave the way for a successful motion for summary disposition. But a truthful "don't know" response is not sanctionable as a default in making discovery.

8. *Regulatory Basis for Contentions*

Both the Applicants and the Staff have served interrogatories to determine the "regulatory basis" or "legal theory" for a contention. Such interrogatories are appropriate and important. We say a word on the subject, however, because we disagree to some extent with the Staff's discussion at p. 5 of its November 27, 1982 filing. We agree that there are more-or-less specific NRC rules applicable to most safety aspects of reactors. And it is often said in a general sense (unrelated to technical pleading requirements) that a showing of compliance with the rules entitles an applicant to a license. *See Power Reactor Development Corp.* v. *Electrical Union*, 367 U.S. 396, 404 (1961). Thus many safety contentions are properly phrased in terms of an alleged noncompliance with a rule, which is always open to challenge. But contrary to the apparent implication of the Staff's discussion, it is not true that all valid safety contentions invariably involve alleged noncompliance with a specific safety rule. In some areas, there is no specific rule but only a Staff regulatory guide; such guides are open to challenge in litigation. Moreover, there are some "gaps" in the regulatory scheme which must be addressed case-by-case because of unique features in the facility or pending development of some generic solution. *See generally, Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978). A contention about a matter not covered by a specific rule need only allege that it poses a significant safety problem. That would be enough to raise an issue under the general requirement for operating licenses (10 CFR 50.57(a)(3)) for a finding of "reasonable assurance" of operation "without endangering the health and safety of the public."

In this regard, the general rule for alleging an environmental contention is the converse of a safety contention. Unlike the safety area, most environmental issues do not implicate specific environmental standards, but rather involve a balancing of comparative impacts. Thus it is usually legally sufficient to allege that a

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particular environmental impact will have a significant adverse effect on the cost/benefit balance.

9. Sanctions

The Commission has given licensing boards the following guidance on sanctions —

> When a participant fails to meet its obligations, a board should consider the imposition of sanctions against the offending party. A spectrum of sanctions from minor to severe is available to the boards to assist in the management of proceedings. For example, the boards could warn the offending party that such conduct will not be tolerated in the future, refuse to consider a filing by the offending party, deny the right to cross-examine or present evidence, dismiss one or more of the party's contentions, impose appropriate sanctions on counsel for a party, or, in severe cases, dismiss the party from the proceeding. In selecting a sanction, boards should consider the relative importance of the unmet obligation, its potential for harm to other parties or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances. Boards should attempt to tailor sanctions to mitigate the harm caused by the failure of a party to fulfill its obligations and bring about improved future compliance. At an early stage in the proceeding, a board should make all parties aware of the Commission's policies in this regard. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454.

Sanctions will be imposed here, if warranted and as appropriate.

10. Scheduling Considerations

There is a major potential for delay where, as here, an intervenor pleads ignorance in response to standard interrogatories. Instead of discovery proceeding concurrently among all parties, the Applicants and Staff must wait until the intervenor has a reasonable opportunity to discover against them. In order to prevent undue delay, it is necessary for the Board to set strict schedules, limit numbers and sets of interrogatories, encourage other means of discovery, and possibly take other actions. We will take all necessary steps to avoid undue delay in this case.

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II. Rulings

On the basis of the pleadings and the foregoing discussion, the Board rules on this dispute as follows:

a. Palmetto's motion for protective order dated August 30, 1982 is denied, except with respect to the handwritten notes of Robert Guild described on p. 1 of "Requests for Documents."

b. Access to all documents listed by Palmetto relating to Contentions 8, 16 and 27, as requested by the Applicants and Staff, is granted, except for Mr. Guild's notes and subject to a possible claim of privilege as to Mr. Lowe's notes, if substantiated within 10 days hereof.

c. The Applicants' alternative motion to dismiss contentions for lack of basis dated September 9, 1982, and reiterated in its response in support dated December 7, 1982, is denied.

d. The Staff's motion for sanctions — *i.e.*, dismissal of the contentions — is denied, without prejudice to its renewal after Palmetto has had a further opportunity for discovery and a further opportunity to make responses, as stated in paragraph e, below.

e. The following schedule is established to give Palmetto a reasonable opportunity for discovery[4] and then to give the Applicants and Staff responsive answers to their outstanding interrogatories on Contentions 8, 16 and 27.

January 14, 1983 — Palmetto may serve detailed, answer-by-answer grounds for relief against the Applicants' objections and responses of September 22 and October 19, 1982.

January 25, 1983 — Board to rule on grounds.

February 11, 1983 — Applicants to serve any required supplemental answers.

February 21, 1983 — If they choose to, Palmetto may serve a second set of "follow-up" interrogatories on Applicants, limited to 20, single-part questions on each contention. The time limits prescribed by the rules will apply from that point forward, subject to discussion and modification at the upcoming discovery conference, discussed below.

The NRC Staff replied to Palmetto's interrogatories on Contentions 8 and 27 on October 19, 1982. Palmetto made no objections to these responses (*see* discussion at 1952, below). Palmetto may file a second set of follow-up interrogatories, limited to 20, single-part questions on Contentions 8 and 27 by January 10, 1983. Staff responses to interrogatories on Contention 16 and a motion for protective order were filed on December 15, 1982. As discussed below (p. 1953), any motion to compel on that filing is being extended to January 14, 1983. Further discovery time limits on that contention can be discussed and established at the upcoming discovery conference, if necessary.

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[4] A "reasonable opportunity" for discovery does not necessarily mean completion of the discovery process, which might continue for some time after an initial set of interrogatories is answered. It means enough discovery to enable a diligent party to give a reasonably responsive answer to basic questions about a contention.

f. In addition to interrogatories, Palmetto should consider taking the depositions of some key Applicant and Staff people during the months of January and February. This discovery method is usually more effective, although more expensive, than interrogatories. While we appreciate the financial limitations on intervenor groups generally, we believe that some use of depositions may be necessary for effective participation in this litigation. In any event, all parties are on notice that we will not uncritically accept a claim of lack of funds for depositions as a justification for not providing timely and responsive answers to interrogatories.

g. The deadlines we are establishing are designed to complete Palmetto's reasonable opportunity for initial discovery on these contentions by around mid-March. Given the number of necessary links in this chain, we will not establish now a specific deadline date for Palmetto to provide responsive answers to the Applicants' and Staff's outstanding interrogatories on these contentions. However, this Order contemplates that such answers will be developed on a continuing basis as they receive information and that all such answers will be due around the end of March or beginning of April.

h. We anticipate that Palmetto or possibly another intervenor may make a broad "don't know" response to interrogatories on other contentions that we have admitted or may admit. Should that happen, there is no point in going through again all that led to our present posture on these contentions. For the present, an intervenor wishing to take that position should so advise the other party and the Board Chairman by conference call. Further procedures can be discussed and determined later.

i. As another means of expediting this inherently slow and cumbersome process, parties are not required to file, and the Board will not expect to receive, a reply to a motion to compel. We agree with Counsel for Palmetto (Tr. 643) that the positions of both opposing parties can be set forth adequately either in the response (and/or motion for protective order) or the motion to compel.

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B. Palmetto Interrogatories to the Applicants on Contentions 8 and 27

This dispute began with service of Palmetto's interrogatories to the Applicants on Contentions 8 and 27.[5] The Applicants filed timely responses and objections, and moved for a protective order. Palmetto thereafter filed a motion to compel discovery, to which the Applicants filed an answer.

This dispute revolves largely around the proper meanings to be attributed to the contentions. Shades of meaning can be crucial because they determine the relevance, and hence the propriety, of an interrogatory. As we have discussed at length, Palmetto has claimed insufficient present knowledge to provide any refinements in the meanings of its own contentions. In these circumstances, we agree with the Applicants that they can select among possible uncertain meanings, so long as the meanings they select are compatible with the wording and context of the contentions. In the absence of particularized contrary arguments from Palmetto, it appears to us that the Applicants' interpretations of the contentions involved here are not unreasonable.

Palmetto's motion to compel is required under the rule to set forth detailed bases for Board action, including "arguments in support of the motion." 10 CFR 2.740(f). This means that we will only grant relief against a party resisting further discovery when the movant gives particularized and persuasive reasons for it. Generalized claims that answers are "evasive" or that objections are "unsubstantial" will not suffice. Examples will not suffice. The movant must address each interrogatory, including consideration of the objection to it, point by tedious point.[6]

Our insistence on this individualized approach is not merely or primarily for the Board's convenience. An objection to an interrogatory on relevance grounds requires the intervenor to explain in concrete terms why the question may lead to relevant evidence. This approach should eventually have the beneficial effect of clarifying what an intervenor means by broad or ambiguous parts of contentions.

Palmetto's motion to compel falls short of these standards. It does not address the Applicants' objections or give particularized reasons why we should compel answers to particular questions. It is unclear whether the Applicants' claim of the attorney-client and work product privileges is even being contested. Indeed the motion is little more than an invitation to the Board to sift through the Applicants' responses to see what we can find fault with.

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[5] The following pleadings are involved in this dispute:

Palmetto Alliance Second Set of Interrogatories and Requests to Produce, dated September 3, 1982.

Applicants' Responses to "Palmetto Alliance Second Set of Interrogatories and Requests to Produce," dated September 22, 1982.

Applicants' Motion for Protective Order, dated September 22, 1982.

Palmetto Alliance Motion to Compel Discovery from Applicants, dated October 4, 1982.

Applicants' Answer to Palmetto Alliance's Motion to Compel, dated October 22, 1982.

[6] For example: "Question ______ is within the scope of the contention because (specific reason). The objection to this question is unsound because (specific reason)."

The Palmetto motion to compel is denied. However, since this is the beginning of a process in which the ground rules may not have been entirely clear heretofore, we are granting Palmetto a further opportunity to file particularized grounds for relief. Any such grounds shall be filed by January 14, 1983.

C. Palmetto's Interrogatories to the Applicants on Contention 16[7]

This dispute is largely a repetition of the prior one. To date it involves Palmetto interrogatories, responses and a motion for protective order from the Applicants, Palmetto's motion to compel and the Applicants' response. The same arguments are advanced in similar prose from both sides.

Palmetto's Contention 16 concerns the relatively narrow subject of safe storage of spent fuel from other reactors, but it does not particularize safety concerns — *e.g.*, criticality, handling, different fuel design characteristics, etc. Once again, it is not unreasonable for the Applicants to place their own interpretation on the contention, if reasonable, subject to Palmetto's right to object to it and the Board's possible disagreement. On this contention, the Applicants do appear to have placed a very narrow interpretation — *i.e.*, whether the Catawba spent fuel pool can accommodate physical differences, if any, in spent fuel assemblies. We caution the Applicants against obstructing the discovery process by placing an unduly narrow interpretation on contentions and questions. We note in this connection that, on the whole, the Staff appears to have been more responsive to similar Palmetto interrogatories. On the other hand, we disagree with Palmetto's request for a "clear and general direction to respond to the question as asked regarding the contention as admitted." Motion to Compel, at 5. While that approach may work well for specific questions within the scope of focused contentions, it is not necessarily appropriate where, as here, the contention is not very focused, many of the questions are broad, and the questioner claims inability to respond in discovery himself.

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[7] Palmetto also served interrogatories on Contention 44. The Applicants declined to answer these on the ground that discovery was not then available on that contention. Our Order of July 8, 1982 (LBP-82-51, 16 NRC 167) was ambiguous in that respect. In any event, discovery on Contention 44 is open now. Responses or objections to Palmetto's questions shall be served within 14 days of this Order.

The pleadings involved in this dispute are:

Applicants' Responses to "Palmetto Alliance Third Set of Interrogatories and Requests to Produce," dated October 19, 1982.

Applicants' Motion for Protective Order, dated October 19, 1982.

Palmetto Alliance Motion to Compel Discovery from Applicants with respect to Palmetto Alliance Contentions 16 and 44, dated November 3, 1982.

Applicants' Answer to Palmetto Alliance's Motion to Compel, dated November 18, 1982.

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Palmetto's motion to compel is denied. If it wishes to pursue these unanswered interrogatories, it is to file particularized grounds for relief by January 14, 1983. Although we are not expecting parties to file answers to motions to compel in the future, we already have a lengthy answer from the Applicants in this instance. Palmetto is to address the points made in that answer about individual interrogatories.

D. Palmetto Interrogatories to the Staff on Contentions 8 and 27[8]

With a few exceptions, these interrogatories were asked and answered. The Staff did object to three interrogatories as unduly broad and Palmetto did not file a timely (or any) motion to compel. In this instance, we sustain the Staff motion which appears to be well taken. In the future, however, we will not consider it necessary to act on a motion for protective order where, as here, a timely motion to compel is not filed. In such a case, the motion for protective order will be deemed granted and the matter closed upon the expiration of the time for filing a motion to compel.

In this instance, Palmetto filed a motion to require the Staff to answer interrogatories, pursuant to 10 CFR 2.720(h)(2)(ii). Although the rules seem to require such a motion, in practice the Staff generally does not stand on that procedure. As they were in this case, the Staff is usually willing to answer interrogatories they consider to be proper, and to raise specific objections to particular interrogatories. For the future, *pro forma* motions of this nature should not be filed against the Staff. The Staff can raise any of its defenses in a motion for protective order.

In its motion to require Staff answers, Palmetto asks us to direct or urge the Staff to help the Intervenors develop their cases in various ways, as approved by the Appeal Board in *Susquehanna*, including

> lending documents and transcripts to intervenor's representatives, giving them extra copies unneeded by the staff, and setting up an additional local Public Document Room . . . where the . . . representatives reside — some 100 miles distant from the plant site. 12 NRC 336-37.

We have set up a local public document room in Columbia, S.C., Palmetto's headquarters. We agree with the Staff that the other forms of assistance requested here are barred by prohibitory language in NRC appropriations legislation and by a recent Controller General's opinion. A copy of a pertinent Commission action in response to that opinion is enclosed. Palmetto's requests for assistance are denied.

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[8] The pleadings involved in this dispute are:

Palmetto Alliance Second Set of Interrogatories and Requests to Produce, dated September 3, 1982.

Palmetto Alliance Motion to Require Staff Answers to Interrogatories, dated September 3, 1982.

NRC Staff Response to Palmetto Alliance Motion to Require Staff Answers to Interrogatories, dated September 23, 1982.

NRC Staff Motion for Protective Order, dated October 19, 1982.

E. Palmetto Interrogatories to the Staff on Contentions 16 and 44

On December 15, 1982, the Staff filed responses to most of these interrogatories and a motion for a protective order as to the remainder. Pursuant to 10 CFR 2.710 and 2.740(p), any motion to compel would be due on December 30, 1982. In view of the fact that we are requiring particularized responses from Palmetto to other Applicant and Staff objections to interrogatories to be filed by January 14, 1983, we are extending the due date for a motion to compel on these interrogatories until January 14, 1983.

F. Other Discovery Matters

There are several recent discovery matters pending before the Licensing Board that are not yet ripe for ruling. In addition, there are some requests for Board action on discovery matters which antedate the discovery freeze in this case and which have not been ruled on. It appears that most of these requests are now moot — *e.g.*, because the conditionally admitted contentions are no longer in the case. The Board asks the parties to advise us at your earliest convenience as to which, if any, prefreeze pleadings (or parts of pleadings) require a Board ruling.

G. Conference on Discovery and Scheduling

We presently anticipate that an evidentiary hearing will begin next fall. That indicates the advisability of discussing and establishing a fixed schedule of milestones leading to a hearing date. This would include deadlines for finishing discovery and filing any motions for summary disposition.

Accordingly, the Board is tentatively scheduling a third prehearing conference to take place on January 20-21 at some convenient location. The exact time and place will be announced later. The parties are asked to submit detailed proposed schedules leading to a hearing, and to suggest agenda items for discussion on ways in which the case could be expedited. These submissions should be mailed by January 7, 1983. The Board is particularly interested in expediting the discovery

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process. In that connection, we ask the parties to be prepared to discuss the discovery "rules" at 1405-06 of the *Byron* case for possible use in this case.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James L. Kelley, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 22nd day of December, 1982.

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Cite as 16 NRC 1955 (1982) LBP-82-117

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Glenn O. Bright

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2) **December 23, 1982**

The Licensing Board directs the NRC staff to respond to relevant interrogatories propounded by intervenor concerning hydrogen release, and to answer certain questions propounded by the Board itself.

RULES OF PRACTICE: DISCOVERY; NRC STAFF

When the Staff has done extensive work in an area, such as hydrogen control, it must answer relevant interrogatories covering that area.

RULES OF PRACTICE: BOARD QUESTIONS

When the Board's review of the intervenor's interrogatories persuades it that there may be substantial gaps in the record resulting from these requests, the Board may phrase its own questions to fill the gaps. It need not wait until the hearing to ask questions. It need not notify the Commission about the questions if they are related to an admitted contention and therefore are not *sua sponte*.

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RULES OF PRACTICE: DISCOVERY

The Board defines "necessary" as used in 10 CFR §2.720(h)(2)(ii). The definition adopted rejects the suggestion of the Commission's staff that intervenors cannot obtain discovery if they only suspect that answers to their questions will be necessary to their case. The Board refused to erect a test that would permit questions to be asked only if the intervenor first knew what the answers would be.

RULES OF PRACTICE: DISCOVERY; SUA SPONTE

An Atomic Safety and Licensing Board need not notify the Commission that it is asking questions that are relevant to an admitted contention. Such questions are not *sua sponte*.

RULES OF PRACTICE: DISCOVERY; INTERPRETING INTERROGATORIES

Interrogatories asked by the non-lawyer representative of an intervenor should be answered fully, interpreting the interrogatories reasonably, both in light of their wording and the purpose of the intervenor. Litigation is not a game but is a search for meaningful answers.

MEMORANDUM AND ORDER

(Concerning Discovery From Staff on Hydrogen Issue)

Ohio Citizens for Responsible Energy (OCRE) has requested that the Staff of the Nuclear Regulatory Commission (staff) answer a set of interrogatories allegedly relevant to Issue #8, the hydrogen contention. The motion was filed on November 30, 1982 and Staff's Answer was filed on December 20, 1982.

On December 13, 1982, we denied the staff's request to reconsider the admission of Issue #8. We denied the request on both procedural and substantive grounds. That decision is now a part of the law of the case. The admitted contention states:

> Applicant has not demonstrated that the manual operation of two recombiners in each of the Perry units is adequate to assure that large amounts of hydrogen can be safely accommodated without a rupture of the containment and a release of substantial quantities of radioactivity into the environment.

Cleveland Electric Illuminating Company, et al. (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105 (1982) at 1110. At the time we admitted

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the contention, we found that "Sunflower has suggested several mechanisms [of hydrogen release], any one of which would do." *Id.* at 1114. In commenting on our decision, in the course of its denial of its own jurisdiction, the Appeal Board suggested that:

> [T]he [Licensing] Board has chosen to explore the matter of hydrogen *control*, rather than hydrogen *generation*. In so doing, it has assumed the existence of a credible accident. While we express no judgment on the propriety of such an assumption, we point out that this is not the same as disregarding the *TMI-Restart* requirement of a credible LOCA scenario.
>
> As noted, the Board did not specify the particular type of "credible" accident it has assumed. Different types of accidents, however, result in different rates and quantities of hydrogen generation. A given hydrogen generating mechanism thus has obvious relevance to the efficacy of a hydrogen control system.

[Emphasis in original.] *Id.* at 1114-15.

In so many words, the Appeal Board already has suggested its answer to the staff arguments before us. The Appeal Board has found that "a given hydrogen generating mechanism . . . has relevance to the efficacy of a hydrogen control system." Hence, interrogatories designed to obtain information about hydrogen generation are relevant to the admitted contention. Since the staff has substantial expertise in this area plus a responsibility to the public to assure public safety, its response to relevant hydrogen generation interrogatories also is *necessary*. It must respond. 10 CFR §2.720(h)(2)(ii) and §2.744. (With respect to documents, the staff asserts that all relevant documents are in the public document room. Consequently, unless staff discovers additional documents in the course of responding to interrogatories, there do not appear to be any documents to discover.)

We note that staff has not cited any precedent that defines "necessary" in the procedural regulations. We know of no such precedent. Hence, this is a matter of first impression.

We reject staff's attempt to define "necessary" to prohibit OCRE from obtaining information that it "suspects" or believes may be helpful to it. OCRE may not be required to know what the staff's views are before it obtains them. To erect that requirement would make a mockery of the discovery process. *Compare* our unpublished Memorandum and Order of December 8, 1982, denying Sunflower's motion for discovery concerning quality assurance.

We consider the staff's views on hydrogen control to be so important that it must disclose those views, fully and completely, in response to a fair interpretation of these interrogatories. We need not decide the meaning of "necessary" in another context. The staff has done extensive work in the hydrogen release area and its views about this subject are "necessary" to a complete record in this context. That is the normal and accepted use of the term "necessary" and no more appropriate definition has been suggested to us.

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We urge staff, in the interest of fairness and efficiency, to make its responses to OCRE's interrogatories complete, in light of the fact that OCRE'S questions were phrased by a non-lawyer, albeit a clever one. Under the circumstances, simple responses should be accompanied by a statement of reasons that responds to OCRE's intent as well as to its specific words. For example, OCRE asks about a "TMI-type accident." The phrase obviously is vague. One meaning that one could attach to the phrase is a loss-of-coolant accident accompanied by one or more operator errors. On the other hand, one might interpret the phrase to apply only to a LOCA in a pressurized water reactor accompanied by instrumentation problems, a failure of the PORV, a failure to close the manual block valve and a manual shut-off of the high pressure injection system. We believe that the staff should respond to the first of these possible meanings, as that meaning is sympathetic to OCRE's intent and to its limited litigation experience.

This proceeding is not a game. Its purpose is to provide OCRE and the public answers to OCRE's questions about the safety of the Perry plant. Particularly when the intervenors have demonstrated their sense of responsibility by dropping contentions after adequate information is supplied to it, as OCRE and Sunflower have done in this proceeding, staff evasiveness in responding to interrogatories is destructive of public confidence.

I. OCRE'S QUESTIONS

In this section of our memorandum, we will discuss each of OCRE's questions, as they have been grouped by OCRE. Motion at 4-8. We will do our best to rule on the relevance of each of the interrogatories even though the staff has not bothered to reach that level of detail because of its firm view that none of the interrogatories is proper.

A. Interrogatories 6-1, 6-2 and 6-25

Each of these questions should be answered pursuant to the provisions of 10 CFR §2.740b(b). Staff has admitted the relevance of 6-1. Interrogatory 6-2 requests information on hydrogen generation without respect to its connection to a TMI-2 accident.

The relevance of 6-2, which inquires about worst-case hydrogen generation, is more difficult to decide. A possible interpretation of the Appeal Board's non-binding directions to us is that we are adjudicating *control* of hydrogen and are looking to hydrogen generation only as an indication of how much and how rapidly hydrogen would be generated. Another possible interpretation of the Appeal Board's non-binding directions to us is that we must limit our concerns to specific credible scenarios of a TMI-2 type. Since we have not yet decided which of these

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views to take, the staff should answer this interrogatory both generally, without respect to the method of hydrogen generation, and then in a more limited fashion, answering solely with respect to a small-break loss-of-coolant accident accompanied by one or more operator errors. We expect, because the Commission is considering promulgating a hydrogen rule for Mark III containments, that staff's response either will supply a basis for believing that hydrogen generation would exceed 10 CFR §50.44 standards or that it would provide us with a discussion of the basis for the Commission's proposed rule on this subject and the staff's reason for concluding that hydrogen generation would not exceed the existing standard under §50.44.

Interrogatory 6-25 may be unnecessarily complex. Staff may answer this interrogatory by referring to its answer to 6-2 and by explaining generally why the listed scenarios are either of concern or not of concern. For those scenarios that are of concern, of course, staff should answer more completely.

B. Interrogatories 6-3 and 6-4

Interrogatory 6-3 is relevant. However, 6-4 was withdrawn by letter of December 14, 1982.

C. Interrogatories 6-5, 6-12, 6-13, 6-26 and 6-30

These questions deal with the strength of the Perry containment and appear to be irrelevant to the admitted contention. This conclusion is based on the Board's belief that neither applicant nor staff will rely on the strength of the containment as a line of defense against a hydrogen explosion. If either of the parties will rely on this line of defense, then we request prompt notification. If we receive notification, these questions must be answered. Otherwise, they need not.

D. Interrogatories 6-6, 6-7 and 6-10

These questions are relevant only to the extent that they inquire into the adequacy of the distributed-igniter hydrogen control system currently planned for Perry. So interpreted, these interrogatories should be answered.

E. Interrogatories 6-8, 6-14, 6-15, 6-32 and 6-34

Interrogatory 6-8 was withdrawn by letter of December 14, 1982. Although the other questions apparently were developed with recombiners in mind, staff should do its best to reinterpret these questions as applicable to the current system,

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including the distributed-igniter system that is planned. With this modified understanding, 6-14, 6-15, 6-32 and 6-34 should be answered.

F. Interrogatories 6-9 and 6-11

Interrogatory 6-9 requests the status of the proposed hydrogen rule for Mark III containments. This is a simple procedural request that ought to be accommodated so that OCRE will know whether impending legal changes affect its pending contention. Interrogatory 6-11 requests a list of ongoing research on hydrogen generation and interim findings, if any. Given the staff's extensive involvement in the hydrogen generation question, access to a list of its research and of interim findings are necessary for OCRE to be fully informed about essential facts and opinions bearing on its contention. This information should be provided.

G. Interrogatories 6-16, 6-17, 6-18 and 6-24

In light of our interpretation of the recombiner interrogatories, above, these questions now seem redundant. However, staff should review these questions and provide any additional information about the distributed-igniter system that has not been provided in response to other questions.

H. Interrogatories 6-19 and 6-21

These interrogatories relate to the adequacy, under the regulations, of the Perry hydrogen control system. Since the staff's views on this question must be published in the Safety Evaluation Report, these interrogatories should be answered. The additional information requested on regulatory nonconformances is entirely proper.

I. Interrogatory 6-22

This interrogatory attempts to clarify a relevant section of the SER that seems to OCRE to be incomplete. This is relevant and should be answered.

J. Interrogatories 6-23, 6-31 and 6-33

OCRE has explained in its Motion, p. 7, why it seeks an answer to these interrogatories. Staff should first respond to this explanation, as if it were an interrogatory. Then, if the mixers are essential to adequate hydrogen control in a core-melt situation, the other interrogatories should be answered. If the mixers are not essential, then the other interrogatories need not be answered.

K. Interrogatories 6-27, 6-28 and 6-29

These interrogatories need be answered only if the staff or applicant will rely on combustion analyses or data to assure the adequacy of the hydrogen control system.

L. Interrogatory 6-35

In response to this question, staff should first provide its understanding of whether the activation of the hydrogen control system is manual. Only if it is manual need the interrogatory be answered.

M. Interrogatory 6-37

This interrogatory is necessary for OCRE to evaluate staff responses to the other interrogatories. It should be answered.

II. OUR QUESTIONS

In reviewing OCRE's questions, the Board has concluded that there are possible gaps in the information it will obtain. Because of the Board's interest in compiling a complete record, we have decided to ask some questions ourselves in order to fill these gaps.

Footnote 7 of staff's Answer seems particularly relevant to our authority to ask these questions. In that footnote, staff states:

> Board questions necessary to assure a complete record on an issue that has survived summary disposition procedures may be appropriate. *See Scenic Hudson Preservation Conference* v. *Federal Power Commission*, 354 F.2d 608, 620 (2d Cir. 1965). However, the necessity of such questions cannot reasonably be determined until the Board has reviewed the evidence presented by the parties on that issue.

We note that the proposition that we may not ask questions during the discovery period is not supported by authority. That is a question for which no authority has been cited. Furthermore, we find that the proposition the staff advances is not appropriate. When the Board notices possible gaps in the record at an early stage of the proceeding, there is every reason for it to raise its concerns promptly. Otherwise, when the Board raises its concerns at the hearing, it is apt to get an

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incomplete response or to find it necessary to continue the hearing. In the interest of expedition, questions that could be asked at the hearing may be asked earlier.

The only important contrary argument is that by asking questions now we may appear to be taking a position in support of OCRE. However, that contrary argument applies at any stage of the proceeding and is without merit at any stage. Board questions are asked for the purpose of eliciting the truth and completing the record. At times, answers may favor one or another party. There is no way to know in advance which party will be advantaged. We do not know at this time which position we will support and we do not even have a present inclination concerning the resolution of evidentiary questions we have not yet seen.

We conclude that we have the authority and responsibility to ask questions and we propound the following questions as our own:

1. What, if anything, has the staff done to develop different scenarios about a TMI-type accident (a loss-of-coolant accident, compounded by one or more human errors) that results in core uncovery and hydrogen generation?
2. What, if anything, has staff done to determine whether such scenarios are credible?
3. Discuss whatever doubts the staff has about whether a TMI-type accident could occur at Perry or at similar BWR reactors?
4. Provide documents and analyses that are not available in the docket room and have not been provided to OCRE in response to its Freedom of Information Act requests but that bear on the above 3 questions.
5. Provide the name of any staff person or NRC consultant who, in the course of work for the NRC, prepared a memorandum or other document suggesting that there are one or more credible TMI-type accident scenarios for Perry or for similar BWR reactors. Provide the memorandum or other document.

In answering these questions, staff may refer to answers to OCRE interrogatories. The purpose of the questions is to make sure that important gaps in the record will not be left open, not to require the production of redundant information.

We do not consider our propounding of questions relevant to admitted contention to be equivalent to the raising of a *sua sponte* issue. A *sua sponte* issue is a question that lies outside the admitted contentions. *See* 10 CFR §2.760a concerning the authority to raise issues not raised by parties. Hence, we need not notify the Commission that we are propounding questions. We do not believe the Commission intends to receive notification every time a Board asks a question, either at a hearing or prior thereto.

III. PROCEDURE

Staff should respond to the interrogatories and Board questions promptly. To the extent that it agrees with applicant's response to similar interrogatories, it may respond by an affidavit listing the answers with which it concurs and indicating whatever differences exist. It should negotiate with OCRE, which has demonstrated its willingness to act responsibly in these proceedings, concerning reasonable methods of making information available to OCRE. Within one week from the issuance of this decision, the staff should file its proposed schedule for compliance with this order.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 23rd day of December, 1982,

ORDERED

The Staff of the Nuclear Regulatory Commission shall respond to interrogatories propounded to it by Ohio Citizens for Responsible Energy and and by this Licensing Board as directed in the accompanying memorandum.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD*

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Glenn O. Bright
ADMINISTRATIVE JUDGE

Bethesda, Maryland

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*Jerry R. Kline, Administrative Judge, did not participate in this decision.

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Cite as 16 NRC 1964 (1982) **LBP-82-117A**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Robert M. Lazo, Chairman
Dr. Richard F. Cole
Dr. A. Dixon Callihan

In the Matter of

Docket Nos. STN-50-528-OL
STN-50-529-OL
STN-50-530-OL
(ASLBP Docket No. 80-447-01-OL)

ARIZONA PUBLIC SERVICE COMPANY, *et al.*
(Palo Verde Nuclear Generating Station, Units 1, 2 and 3)

December 30, 1982

The Licensing Board issues a Partial Initial Decision authorizing the issuance of an operating license for Palo Verde Unit 1. The Board finds that:

1. There is reasonable assurance that there will be a sufficient supply of effluent from the 91st Avenue and the Tolleson Wastewater Treatment Plants to meet the operational requirements of the three Palo Verde units.
2. There is reasonable assurance that the sources of water available to the Phoenix metropolitan area during the first five years of operation of all Palo Verde units and beyond are sufficient that the occurrence of an event triggering Section 21 of Agreement No. 13904, which could curtail the supply of water to Palo Verde in the event of an emergency, is remote.
3. The estimated requirements of effluent for condenser cooling are not understated.
4. Effluent is not required for the safe shutdown of the Palo Verde units.

NEPA: AGENCY RESPONSIBILITIES

The Commission is not obligated under NEPA to consider all issues which are currently the subject of litigation in other forums and which one day in the future might have an impact on the amount of effluent available to Palo Verde.

NEPA: AGENCY RESPONSIBILITIES

Where environmental effects are remote and speculative, agencies are not precluded from proceeding with a project even though all uncertainties are not removed.

OPERATING LICENSE PROCEEDINGS: ENVIRONMENTAL ISSUES

Although the Commission will take cognizance of activities before other legal tribunals when facts so warrant, it should not delay the licensing proceeding or withhold license merely because some other legal tribunal might conceivably take future action which may later have an impact upon the operation of a nuclear facility.

NEPA: RULE OF REASON

Environmental uncertainties raised by Intervenors in NRC proceedings do not result in a *per se* denial of the license, but rather are subject to a rule of reason.

NEPA: COST-BENEFIT ANALYSIS; BALANCE

Under NEPA, cost-benefit balancing is now required, but only if the proposed nuclear plant has environmental disadvantages in comparison to possible alternatives. *Consumers Power Company* (Midland Plants, Units 1 and 2), ALAB-458, 7 NRC 155, 162 (1978).

NEPA: COST-BENEFIT ANALYSIS; BALANCE

Cost-benefit comparison has been limited further by the Commission's recent amendment to 10 CFR Part 51 which precludes alternative energy source issues from being considered in operating license proceedings. 47 *Fed. Reg.* 12940 (March 26, 1982).

TECHNICAL ISSUES DISCUSSED

Water supply adequacy
Cooling water supply

APPEARANCES

Messrs. **Arthur C. Gehr** and **Charles A. Bischoff,** Phoenix, Arizona, for Applicants Arizona Public Service Company, *et al*.

Messrs. **Lee Scott Dewey** and **Edwin J. Reis** for the Nuclear Regulatory Commission Staff.

Ms. **Lynne Bernabei,** Washington, D.C., for intervenor Patricia Lee Hourihan.

Mr. **Rand L. Greenfield,** Assistant Attorney General of New Mexico, Santa Fe, New Mexico, for the State of New Mexico.

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INITIAL DECISION

I. BACKGROUND

This Initial Decision concerns the application filed with the United States Nuclear Regulatory Commission (hereinafter "the Commission") by the Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, and Southern California Public Power Authority (hereinafter collectively "Applicants") for three facility operating licenses. Such licenses would authorize the Applicants to possess, use and operate Palo Verde Nuclear Generating Station, Units 1, 2 and 3 (hereinafter "PVNGS" or "facilities"), three pressurized water nuclear reactors located on Applicants' site in

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Maricopa County, Arizona, approximately 36 miles west of the City of Phoenix. Permits to construct the three reactor units, each of which is designed to operate at a rated output of 1,270 megawatts of electrical power, were issued in May 1976.

On July 25, 1980, the Commission published in the *Federal Register* a notice of receipt of an application for facility operating licenses for PVNGS and notice of opportunity for hearing (45 *Fed. Reg.* 49732). The notice provided that any person whose interest may be affected by this proceeding may file a petition for leave to intervene. In response to that notice, Ms. Patricia Lee Hourihan (hereinafter "Intervenor") submitted a timely Petition for Leave to Intervene and Request for a Hearing. The petition was granted by this Atomic Safety and Licensing Board (hereinafter "Board") which ordered that a hearing be held. In addition, the Board granted the motion by the Attorney General of the State of New Mexico to participate as an interested state agency pursuant to the provisions of 10 CFR §2.715(c). The New Mexico Attorney General did not take any position respecting the application, raise any issues or participate in the hearings.

The Board approved the admission for litigation of five of the Intervenor's contentions and allowed the Intervenor the opportunity to file additional contentions respecting emergency planning at such time as the emergency plans were prepared.[1] Two of the admitted contentions subsequently were withdrawn by the Intervenor. Applicants and the Staff of the Nuclear Regulatory Commission (hereinafter "Staff") filed motions for summary disposition of the remaining three contentions, two of which motions were granted by the Board.[2] No contentions concerning emergency planning were advanced. Accordingly, one contention, No. 5, challenging the adequacy of the supply of condenser cooling water remained at issue for the hearing.

Contention No. 5, in its original form stipulated to by the parties and admitted by the Board for litigation in this proceeding, reads as follows:

> "Applicants will not have an assured supply of usable treated municipal effluent for cooling purposes for Unit 3 of PVNGS during months of peak reactor need for the first five years of operation."

During the course of discovery on this issue, the Intervenor withdrew her challenge of the suitability or quality of the effluent except to the extent that the quality might impact the quantity of effluent required for condenser cooling.

By a letter to the Board, dated February 10, 1982, Mr. Bill Stephens, Executive Director of the Arizona Municipal Water Users Association (AMWUA), raised

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[1] *See* Board Memorandum and Order, April 16, 1981, and Memorandum and Order, December 11, 1981.

[2] *See* Board Memorandum and Order, March 17, 1982.

questions respecting the potential interruption of the major source of effluent for all three Palo Verde units.[3]

At the outset of the hearing, Contention No. 5 was expanded to include the question of: (i) whether there is an assured supply of effluent for all three units rather than just for Unit 3; (ii) whether a greater amount of effluent will be required for the three Palo Verde units if the quality of effluent is lower than that presently expected; and (iii) whether the supply of effluent will be critical to the safety of operation of the Palo Verde units, including their safe shutdown under either normal or abnormal conditions, *i.e.*, what is the relationship, if any, between the "ultimate heat sink" and the treated effluent in the reservoir to be used for condenser cooling? (Findings 1-6).

Prior to the commencement of the evidentiary hearing the Board conducted two prehearing sessions and several telephone conferences on certain specific procedural issues. Limited appearance statements were received from members of the public in Phoenix, Arizona on April 27 and April 28, 1982. Presentation of evidence commenced on April 28, 1982, and continued during the course of three hearing sessions, comprising 11 days in total. At the conclusion of the presentation of the case in chief and rebuttal, the record was closed on June 25, 1982.

The decisional record in this proceeding consists of the following:

a. The Commission's Notice of Hearing;
b. The material pleadings filed herein, including the petitions and other pleadings filed by the parties, and the orders issued by the Board during the course of this proceeding;
c. All of the exhibits received into evidence as indicated in Appendix B hereto; and
d. the transcript consisting of 2710 pages. (Witnesses who testified in this proceeding are listed in Appendix A).

In making its findings in this proceeding, the Board considered the entire record and all of the proposed findings submitted by the parties. Each of the proposed findings of the parties which is not incorporated directly or inferentially in this Initial Decision is rejected as being unsupported in fact or in law or as being unnecessary to the rendering of this Decision.

This Board's jurisdiction is limited to a determination of findings of fact and conclusions of law on matters put into controversy by the parties to the proceeding or found by the Board to involve a serious safety, environmental or common

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[3] AMWUA is an organization that represents five of the six municipalities who are parties to Agreement No. 13904 under which the major source of effluent for operation of PVNGS will be supplied. Stephens' letter recited, among other things, that the renegotiation of Agreement No. 13904 was in progress, including the issue of the right of the cities to refuse to deliver effluent for Palo Verde Units 1, 2 and 3 when a critical need for water exists in the cities. The questions presented by Stephens' letter constituted the principal reason for the Board's denial of Applicants' motion for summary disposition of the effluent supply contention.

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defense and security question. The Board has made no such additional determinations in this case.

II. INTRODUCTION

The Palo Verde Nuclear Generating Station is comprised of three pressurized water reactors and auxiliary equipment necessary to generate electrical energy in steam-driven turbines. The thermal energy derived in the reactor core from the fission process in uranium is transported to the turbine by two fluid circuits, the primary and secondary reactor coolants, separated by the steam generator. After traversing the turbine, the steam must be condensed by removal of a not insignificant quantity of heat before this secondary coolant can be recycled to the steam generator. This heat removal from the discharge from the turbine, through the condenser tubes, is by still another fluid circuit designated below as the Circulating Water System (CWS). The CWS is constituted by the condensers, the cooling towers, a capability for adding and discharging water and for adding chemicals, and a storage reservoir together with necessary pumps, controls, etc., for operation.

The availability of sufficient water, the condenser coolant, to maintain the CWS operable is the principal issue in these proceedings.

Careful control of the quality of the coolant in the CWS is necessary for acceptable performance with limited corrosion, biological growth, and other undesirable conditions. In normal operation, impurities, both dissolved and suspended, concentrate because of various losses of water. To prevent the concentration of impurities from exceeding specification, water of high impurity content is continuously bled from the CWS in a procedure called blowdown. To overcome this loss and to maintain the required inventory within the CWS, new water of relatively high purity, the makeup, must be continually added. The present design allows a fifteen-fold increase in concentrations within the CWS, *i.e.*, the blowdown impurity concentrations are fifteen times greater than the makeup concentrations. The makeup is supplied by the Water Reclamation Plant (WRP).

Additional purification of the fluid in the CWS is effected by the direct addition of chemicals.

Other losses from the CWS which require compensation by the makeup include evaporation from the storage reservoir and evaporation and drift from the cooling towers as vapor and liquid, respectively.

The blowdown is discharged to a pond where the rejected coolant evaporates naturally.

The WRP is located on the PVNGS site and provides tertiary treatment of the effluent from wastewater plants in the Phoenix area. The WRP supplies treated water to the storage reservoir from which the supply to the CWS is drawn.

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Capability must be supplied to remove the decay heat of the fission products from the reactor core following shutdown, either normal or emergency. This capability, a safety feature, entails still other circulating water systems where the cooling is effected by spray ponds called "Essential Spray Ponds." The inventory of this system, called the ultimate heat sink, must be sufficient to operate for thirty days without replenishment. The supply to the spray ponds is the domestic water system fed by onsite wells.

III. OPINION

The Intervenor's position is that the Applicants have not demonstrated that they will have an assured supply of condenser cooling water for the three PVNGS units during the summer months for the first five years of operation. In order to resolve that issue, we must first address the question of how much condenser cooling water makeup is required by each of the three reactor units and then determine whether sufficient sources of makeup coolant are available for use at PVNGS.

A. Condenser Cooling Water Requirements

Each of the PVNGS units will require an average daily condenser-coolant makeup of 19.1 million gallons (mg) which is equal to 21,400 acre-feet per year (afy). For all three units, therefore, the average daily rate of water usage averaged over a year is 57.3 mg (64,200 afy). This estimate is based on: (a) operation of each unit at 95% of rated power for eleven months each year followed by a one-month maintenance and refueling interval equivalent to a year-round capacity factor of 87%; (b) no recovery of the blowdown from the CWS; (c) average ambient meteorological conditions; and (d) a 15-fold increase in the concentration of the dissolved solids in the CWS before blowdowns[4] (Finding 7).

The makeup required depends upon climate conditions and varies throughout the year between 53 and almost 70 million gallons per day (mgd). Requirements are greatest during the summer months when both the losses due to evaporation and the demand for electricity are greatest (Findings 8, 9, 10, 13).

The requirement for cooling water is estimated to be greatest during the month of June (Finding 11). Since PVNGS Unit 3 is scheduled for commercial operation in May 1986, the critical month for meeting cooling water makeup requirements will be June 1986 (Findings 11, 12, 13).

The coolant makeup will be effluent from wastewater treatment plants in the Phoenix area. The effluent will be piped to the PVNGS and further processed at the

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[4] In the nomenclature of the trade this increase is known as 15 cycles of concentration.

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WRP prior to being stored in the 750-million gallon, onsite reservoir as a supply to the reactors' CWSs. The function of the CWS is to transfer heat from the turbine steam discharge to the atmosphere through the condenser and the cooling towers (Findings 14-19).

B. Alleged Uncertainties in Palo Verde Effluent Requirements

The Intervenor contends that the Applicants have underestimated the amount of effluent necessary for the PVNGS and argues that the assumptions and calculations leading to the determination of the cooling water requirements are not conservative and that they are, in actuality, considerably higher. Specifically, Intervenor argues that the average annual requirement should be based on the demand during the month of greatest need (June) adjusted to an average annual capacity factor of 87%. Calculated in this manner the requirement would be approximately 64 mgd (72,000 afy). The Intervenor further contends that the Circulating Water Test Facility (CWTF) and bench-scale studies performed by the Applicants do not demonstrate the feasibility of CWS operation at 15 cycles of concentration for the following reasons:

1. the test equipment was less than full-scale size;
2. the equipment was not of representative geometry;
3. the duration of the tests was too short; and
4. the coolant chemistry was not predictable; *i.e.*, the constituents concentrated at different rates.

Accordingly the Intervenor argues that the Applicants cannot achieve 15 cycles of concentration of the wastewater effluent in its use in the CWS. Since the required cooling water makeup is inversely related to the number of cycles permitted (Finding 20), Intervenor contends that the effluent requirement is greatly underestimated.

The Intervenor also argues that Applicants did not consider the possibility of a further decrease in the quality of the potable water supplied to the Cities.

Intervenor holds that the introduction of Central Arizona Project (CAP) water and an increase in the consumption of groundwater could raise the concentration of total dissolved solids (TDS) by 20 to 30% from the estimated 800 to 1000 mg/l presently in wastewater effluent. Further, this deterioration will increase the PVNGS coolant requirement above expectations.

Intervenor states that no power plants subject effluent, used as a coolant, to 15 cycles of concentration and that no consideration was given in the present instance to the effect of fluctuating levels of phosphorous on the ability of the WRP to meet water quality requirements.

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1. Conservatism of Applicants' Estimate of Makeup Requirements

The peak monthly makeup demand of 70 mgd, with three units operating at 95% full power, is overestimated by 20% because it is based on climatic data more severe than those observed during 65 years at Buckeye and Gila Bend, during 30 years at Phoenix, and 8 years at the PVNGS site (Finding 13). The Board also finds the estimated 70 mgd during the period of greatest requirement to be conservative because incremental fluctuations of short duration can be satisfied by the availability and use of additional wastewater (in excess of 70 mgd) from the Phoenix area treatment plants (Findings 21-25) or by drawdown of the 750-mg-capacity reservoir. The Board believes that calculating the total annual water requirement on the basis of the peak month is unreasonable, unrealistic and unnecessary. If the peak demand is satisfied, calculations such as those proposed by the Intervenor are of no significance. The Board finds the Applicants' estimates are based on facts and reasonable assumptions and are conservative.

2. Water Quality and Treatment Studies

Applicants conducted various studies in order to characterize the coolant supply and to verify the practicality of the area wastewater treatment plants as a source. Initial studies in 1973-74 included the identification of five constituents, calcium, magnesium, silica, phosphorous (as phosphate) and ammonia, of the effluent which might contribute to operations problems including scale formation, fouling, corrosion and biological growth in the CWS (Finding 26). Additional studies were conducted to select appropriate treatments far reducing the concentrations of those constituents to acceptable levels. Circulating water tests were also conducted to verify the acceptability of the WRP product for use in the CWS (Findings 27-31).

A 1982 demonstration test of the WRP as constructed provided results showing the product to be within the guidelines established as acceptable for use in the CWS (Finding 29).

Two types of circulating water test programs were conducted. One employed a specially constructed facility (CWTF) located at the 91st Ave. Wastewater Treatment Plant in Phoenix which consisted of a heat source, heat exchanger, cooling tower, and necessary pump, piping and controls for operation makeup and blowdown. The other program involved bench-scale tests at a Bechtel Power Corp. laboratory in Belmont, CA, which corroborated the results from the CWTF (Findings 32-34).

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3. *Reliability and Capability of the Water Reclamation Plant*

It is the Board's view that the Applicants have demonstrated the capability and the reliability of the WRP to produce an effluent stream of sufficient quality to permit operation of the CWS at 15 cycles of concentration (Findings 27-29, 35, 36).

The Intervenor's allegation of unreliability centered around the Applicants' reliability study. That study and the recommendations of an independent design review board led to modifications in the design and layout of the WRP which provided increased flexibility of the plant and greatly improved the reliability of its operation (Finding 36). The chemical character of the input to the WRP, determined in studies conducted since 1973 reasonably confirm the Applicants' description of the wastewater (Finding 29).

Studies at the WRP and operational experience at other plants indicate that phosphates should not present any operational problems (Findings 29, 35, 37).

The WRP consists of a series of standard, well-established water and wastewater treatment processes. Each is widely used and none is unique. The processes are:

a. biological nitrification via trickling filters;
b. chemical softening in a two-stage lime-soda ash treatment;
c. removal of suspended solids by dual-media gravity filtration; and
d. control of biological growth by chlorination (Finding 28).

Intervenor's speculative assertion that the quality of the effluent from the area plants will deteriorate with time and result in increased makeup requirements must fail for two reasons: Intervenor did not take into account the capability of the WRP and the CWS to treat the deteriorated effluent to acceptable concentrations of impurities (Findings 28, 35); and did not demonstrate that the use of CAP water would affect the quality of the effluent. In fact, CAP water, which is intended to replace some groundwater sources (Finding 38), will generally be of higher quality than groundwater when measured in terms of total dissolved solids (Finding 39).

Additionally, Intervenor's argument that increased groundwater consumption will result in increased solids in the effluent from the municipal plants is not borne out by tests for quality performed by the Applicants. Although the addition of groundwater to the raw water supply of the cities contributing wastewater to area treatment plants was recently increased to 50 from 40%, Applicants' tests show no deterioriation in the quality of the effluent. In general, the tests show the quality to be stable as to some constitutents and to be improving in others (Finding 29).

4. *CWTF and Bench-Scale Tests*

The Applicants conducted the circulating water test studies to verify the practicality of operating the CWS at up to 15 cycles of concentration of dissolved solids in the coolant, to identify potential operating problems, to determine the kind and quantity of chemical treatment necessary in the CWS itself, and to determine relative corrosion rates of candidate materials for condenser tubes and their supporting tube sheets (Finding 31). An independent review of the testing methodology and the results concluded that these test programs were adequate, achieved their purpose, and produced results favorable to the operation of the PVNGS (Findings 40, 41).

Most of the Intervenor's arguments on water quality centered around the circulating water studies. The criticisms and responses to them follow.

a. The scale of the CWTF was too small to allow meaningful extrapolation of the data to major components of the CWS.

Since circulating water systems are an integral part of all steam-powered electric generating plants, a wealth of experience has been gained in their design and operation (Finding 15). The design of CWS equipment could have been based on that experience alone without a model (Findings 37, 42-50). The tests were successful, for example, in establishing that the CWS could successfully operate at up to 15 cycles of concentration of the dissolved solids (Findings 31-34, 51-56).

b. The geometry of the test equipment and of the CWS were dissimilar.

The configuration of the heat exchanger of the CWTS was similar to the tube and tube sheet arrangement in typical condensers including those at PVNGS (Finding 51).

c. The duration of the tests was too short.

This criticism has some merit although the purpose of the tests was to study accelerated corrosion and potential scaling. The extreme conditions, simulated in the laboratory, and the comparative tests of possible materials for heat exchanger tubes, including titanium, were sufficient to determine relative corrosion rates and to compare candidate materials. In addition, the criticism ignores the fact that the four final sample corrosion tests of titanium in the CWTF represented not two, but eight weeks of continuous and successful operation. Further, these corrosion results were confirmed in the bench-scale experiments (Findings 31-34, 37, 40-56).

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d. *The concentrations of various chemical constituents during a particular test period changed by different (fractional) amounts or at different time rates, implying inconsistencies in the results.*

The tests were not conducted under steady-state conditions and, accordingly, it is not expected that all chemicals would necessarily concentrate at the same rate. These time variant rates were noted in the Nalco Report where the differences were attributed to the analytical techniques and were not reflective of any instability of the coolant (Findings 33, 41).

5. *Relationship Between Effluent Supply and the Ultimate Heat Sink*

The Intervenor has questioned whether the supply of effluent is critical to the safe shutdown of the Palo Verde reactors under either normal or accident conditions. This concern apparently arose because of a statement which appeared in Applicants' Final Safety Analysis Report[5] which inferred that the reservoir holding treated effluent was a backup source for makeup to the essential spray ponds of the ultimate heat sink for each Palo Verde unit. However, the Applicants have advised the Staff that the regional aquifer is the source of water for makeup to the ultimate heat sink of each of the Palo Verde units. Thus, the record is clear that neither the reservoir nor treated effluent is a source of makeup water to the ultimate heat sink. Accordingly, effluent is not required for the safe shutdown of the reactors, and a potential shortage caused by loss of wastewater effluent from the Phoenix area Plants does not raise a safety concern. In any event, Applicants appear to have satisfied the requirements of the Commission's General Design Criteria (specifically Criteria 2 and 44) without recourse to the use of the onsite reservoir (Findings 57-67).

6. *Summary of Requirements and Supply of Coolant Makeup*

The daily requirement for condenser coolant makeup at PVNGS, averaged over a year has been established (*supra*) as somewhat more than 57 mg after adjustment for variations in climatic conditions and for scheduled outages (Finding 7). The availability of effluent from Phoenix Area wastewater plants is yet to be discussed in detail. It is noted here, however, that a rather comprehensive summary of this demand-and-supply projection, dated May 1982, is in this record (Findings 68-70). The summary presents the projected output of the two treatment plants in Phoenix at 91st Ave. and 23rd Ave., the contractual commitments of that output

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[5] *See* §9.2.5.4 FSAR, Amendment 8 (March, 1982).

together with the expected demands on those commitments and, finally, the net demand. The summary is a part of a report prepared for the association of local governments as an updating of a similar study in 1979 funded by the Environmental Protection Agency. The updating is required by EPA.

For the purposes of these proceedings, the absence from the above-cited summary, *per se*, of the availability of effluent from the Tolleson Plant (about 8 mgd) and of CAP water is noted. Recognition is made of an effect on effluent availability of projected additions of small plants serving local areas.

In recapitulation of the summary, Findings 68-70, it is observed that, with the inclusion of Tolleson, for no period through 2020 is a deficit contemplated on the basis of expected usages. In terms of commitments, however, deficits appear in 1985, 1990 and 1995. In the second of these comparisons, the full 125-mgd Palo Verde contractural item is carried; in the first, the 58-mgd expected use. Hence, the rather striking difference in the two cases.

An examination and comparison of the supply and of the demand for coolant makeup on a monthly basis throughout the year shows that when sufficient wastewater is available to satisfy the peak demand, the supply exceeds the demand in all other months (Finding 71).

C. Water Availability

1. Sources of Coolant for Palo Verde Nuclear Generating Station

From the foregoing discussion, we have seen that the average daily requirement for makeup of the condenser cooling water for the three PVNGS units is estimated to be 57.3 mgd (64,200 afy) (Finding 7). In order to determine the adequacy of the supply, we first must consider the sources of coolant for Palo Verde.

The principal source of water for cooling the steam generators at PVNGS is effluent from the sewage treatment plants which process wastewater from Phoenix and nearby municipalities. The Palo Verde Units will obtain effluent for cooling purposes under an April 23, 1973 contract, entitled, "Agreement No. 13904, Option and Purchase of Effluent" among Arizona Public Service Company and Salt River Project Agricultural Improvement and Power District (two of the Applicants), the City of Phoenix, the City of Glendale, the City of Mesa, the City of Scottsdale, the City of Tempe and the Town of Youngtown (Arizona municipal corporations hereinafter collectively referred to as "the Cities") (Finding 72).

The primary source of effluent under Agreement No. 13904 will be the 91st Avenue Sewage Treatment Plant (91st Ave. Plant) located some ten miles west of the City of Phoenix and shared in ownership, operation and maintenance by the Cities. A secondary source is the 23rd Avenue Sewage Treatment Plant (23rd Ave. Plant) owned and operated by and located within the City of Phoenix. In addition, a small amount of effluent will be supplied from the Tolleson Wastewater Treatment

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Plant, owned and operated by the City of Tolleson. The approximate annual output capacities of these plants in 1982 are: 90 mgd (100,000 afy) at 91st Ave.;[6] 37.2 mgd (42,000 afy) at 23rd Ave.; and 8.3 mgd (9,300 afy) at Tolleson. The effluent will be transported from the 91st Ave. Plant and the Tolleson Plant via underground pipe more than 35 miles to the nuclear station where further treatment will occur. The construction of a connection between the 23rd Ave. and 91st Ave. Plants is viable although not yet in place (Finding 73).

Agreement No. 13904 provides an option to the Applicants subject to prior commitments to other users for the purchase annually of up to 11,400 mg (35,000 af) of effluent as required by each of a maximum of four operating electric-generating units. The Agreement provides, however, for a unilateral distribution of any unused portion of effluent at one unit among any other electric-generating units. Therefore, for Units 1, 2 and 3 presently nearing completion, there is available under the contract 125 mgd (140,000 afy) (Finding 74).

Effluent from the Tolleson Plant is being made available under "Agreement for the Sale and Purchase of Wastewater Effluent" dated June 12, 1981. The quantity to be made available is also subject to prior commitment. The amount, however, is not to exceed 8.3 mgd (Finding 75).

The effluent available to Palo Verde under the Agreements will be less than the design capacities of the treatment plants because of a number of factors including in-place contractual arrangements for delivery of effluent to other parties. Fulfillment of these prior commitments takes precedence over the demand by the nuclear generating station (Finding 76).

The 91st Ave. Plant is committed to furnish effluent to the Buckeye Irrigation Company in the amount of 28.6 mgd (30,000 afy); to the Arizona Game and Fish Department by 6.5 mgd (7,280 afy); and to the U.S. Water Conservation Laboratory by 1 mgd (1,120 afy). The necessity of fulfilling the latter commitment is problematic because the Laboratory located at Flushing Meadows was destroyed by a flood in 1978 (Finding 77).

Under an instrument different from Agreement 13904, the Roosevelt Irrigation District holds an option to purchase 17.9 mgd (20,000 afy) of effluent from the 23rd Ave. Plant. The option has not been exercised because the quality of the effluent is not sufficiently high for its intended agricultural use. Further, a quantity of the 1985 effluent from the 23rd Ave. plant has a potential for salvage and reuse in SRP programs, such as for irrigation, after percolation into soil and pumped recovery. Although no firm numeric was assigned to this potential supply, it is implied to be of the order of 1,000 mg (Findings 78-79).

The Tolleson Plant is committed to supply up to 2.0 mgd (2,240 afy) for the production of sod on an area adjacent to the Plant. Additionally, Tolleson reserves

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[6] An expansion of the Plant, expected to be completed in 1983, will bring its capacity to 120 mgd. Further expansion will bring the capacity to 150 mgd by 1985.

claim up to ten percent of all effluent in excess of the above 2.0 mgd. Further, Tolleson sales for steam-condenser cooling will be restricted to 8.3 mgd (9,300 afy) (Finding 80).

One of the principal issues in this proceeding is the provision in the contractual options, among the Applicants and the various municipalities supplying effluent, whereby under certain conditions delivery of effluent to the generating station may be denied. Essentially identical statements of these conditions appear as Section 21 of Agreement 13904 and as Section 10 of the Tolleson contract.

Each of the contracts grants the right to the suppliers to interrupt delivery of effluent upon the collective occurrence of the following:

a. there exists in the municipalities a critical need for water for domestic purposes;
b. all other reasonable sources of water to the municipalities have been exhausted;
c. reasonable steps have been taken to conserve the water supply to the municipalities; and
d. reasonable notice of the critical need has been given to the Applicants.

The Intervenor argues that there is no "assured" supply of effluent because of the risk of critical water shortages (which might trigger Section 21) due to either the reductions in or inadequacy of surface water supplies or to contamination of underground water.

The Board recognizes that there are some elements of Section 21 which require legal interpretation. For example, must a "critical need for water" exist in all of the cities or in only one of the cities? Or, can one city by itself, irrespective of its contributions to the 91st Ave. Plant, force an interruption in the delivery of effluent even if all the others do not wish to do so, and if so, how much effluent is to be interrupted? This Board does not have jurisdiction to interpret contracts and should not undertake to do so. If and when an issue arises, the parties will resolve the questions themselves, or if they are unable to do so, perhaps a court of competent jurisdiction will. Nevertheless, the Board may on the basis of the record in this proceeding make determinations of fact as to the likelihood that a critical need for water for domestic purposes will occur.

Agreement No. 13904 provides an option for the purchase of effluent by the Applicants from both the 91st Ave. and the 23rd Ave. Plants. Whereas much discussion of the Agreement in this record was at least implicitly centered about the 91st Ave. discharge, it is noted that any effluent from the 23rd Ave. Plant is contractually available to meet the commitment to the Applicants or to be recognized as a source under condition *b* of Section 21. The average daily effluent flow from the 23rd Ave. Plant in 1981 was 35.8 mg (40,000 af) (Findings 81, 82, 83).

Direct use of effluent from wastewater treatment plants by municipalities potentially jeopardizes the anticipated supply to the coolant system of the nuclear generating station. Possible acceptable uses include irrigation, exchange with agricultural water supplies, and as a part of the domestic supply itself (Finding 84).

Effluent may serve as an irrigational liquid for such areas as parks and golf courses. To be effective, however, the source of the liquid should be proximate to the area of use leading to the concept of a number of relatively small (capacity about 3 mgd) satellite treatment plants appropriately located. However, it is believed that the effect of this substitution on the effluent supply to Palo Verde will not be major (Finding 85).

Direct use of effluent as a part of the domestic supply entails extensive purification such as by a high-level water treatment plant or by the employment of a process whereby effluent is discharged to the ground where it is filtered in its return to the water table. Neither process is presently economically feasible here. Additionally to the economics, there is potentially absent a social acceptance of utilizing effluent for drinking water. For example, some reluctance has been displayed by Indians towards use of effluent even for agricultural purposes. No economic above-ground capability for the necessarily high purification process to achieve characteristics required for human consumption is currently available. Nevertheless, a population may be driven to human consumption of treated effluent under severe shortages of alternates (Finding 86).

2. *Availability*

Projections of sewage effluent production from the 91st Ave. Plant were made in July 1979 by the U.S. Army Corps of Engineers (COE) and the U.S. Environmental Protection Agency for the Maricopa Association of Governments (MAG) which appeared as the "Final Environmental Impact Statement on the Maricopa Association of Governments Point Source Metro Phoenix 208 Waste Water Management Plan." MAG is a governmental body charged with planning the wastewater treatment facilities in the Phoenix metropolitan area (Finding 87). In 1979 the City of Phoenix made an independent projection. The two sets of values, in mgd, for the 91st Ave. Plant are:

	Year						
	1980	**1983**	**1985**	**1986**	**1990**	**1995**	**2000**
MAG	84.5	98.0	102.9	105.0	113.7	124.3	137.0
Phoenix	89.5	103.6	113.0	117.8	136.7	160.3	183.8

(Finding 21)

In the MAG report, the COE concluded that insufficient effluent would be available in 1986 for the operation of Unit 3 if the monthly usage throughout the year were constant and equal to the requirement during the month of greatest need. Assuming constant electrical output at PVNGS throughout the year, the peak

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monthly makeup demand will occur during the summer when atmospheric conditions cause the highest evaporation rates. The record shows that the highest monthly demand will be in June. Of course, that requirement will also be dependent upon the electrical output of the station (Finding 11).

The Phoenix predictions in the above table were based on more recent population growth estimates than were those of MAG and may be more representative of actuality. The flow experience in 1980 was 88.5 mgd, somewhat supportive of the Phoenix prediction. Updatings in 1981 of both of the above projections showed greater production — about 5% in the one by MAG and 15% in the one by Phoenix. A 1982 update shows an even slightly greater production. The most conservative of these trends of production with time brought the Staff to a minimum value of 106.7 mgd in 1986 as a monthly average. Adjustment of this average for monthly variation gives for June 1986 a predicted minimum production of 104.6 mgd. The corresponding maximum, based on Phoenix estimates is 131.5 mgd. Recognition of commitments by the Plant for delivery of effluent to others reduces the Staff's prediction to between 71.3 and 86.7 mgd (0.080 and 0.097 mafy), the latter conservative value is set by the nominal 120 mgd Plant capacity (Finding 23).

Additionally, up to 8.3 mgd (0.009 mafy) of effluent will be available from the City of Tolleson although the estimated Tolleson output in 1986 is 7.9 mgd. The contents of a reservoir on the Palo Verde site, with a capacity of 750 mg (0.002 maf), will provide a cushion against short-term fluctuations (Finding 88).

The MAG report, which recorded the plans for wastewater handling in the Phoenix area through the year 2000, was updated in 1982 by incorporating changes since 1979 which will affect that planning. The changes include: increased population projections by MAG; passage of the Groundwater Management Act which places emphasis on utilizing all water resources; changes in planning areas for some communities; identification of specific large-scale developments in the area; and a proposal to allow exchanges of effluent for Central Arizona Project water allocations (Finding 22).

Additional evidence on the availability of effluent from the 91st Ave. Plant was presented by the Applicants and provided bases for the above MAG projection. Estimates of the effluent from the 91st and 23rd Ave. Plants were made on a month-by-month basis for the years 1980 through 1986. The average of those monthly averages was then taken as the availability for each of those years. Those annual projections are labeled MAG in the table of p. 2002, *supra* (Finding 25).

The combined effluents from the 91st Ave. and the Tolleson Plants are shown to be adequate to fulfill the need for coolant makeup at the PVNGS when all completed units are operating at a capacity factor as great as 87.5% during 1985, 1986 and 1987 (Finding 89).

The most recently developed predictions of effluent available to the PVNGS appearing in this record are a part of the 1982 update of the MAG water quality

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management program. The quantities, in mgd, available from the 91st and 23rd Ave. Plants over four decades are:

	Year						
	1980	**1985**	**1990**	**1995**	**2000**	**2010**	**2020**
91st Ave.	87.9	105.6	119.1	133.8	152.2	186.2	215.7
23rd Ave.	42.6	42.4	42.5	42.5	43.6	46.5	48.3

The output from 91st Ave. in 1985 is projected as 105.6 mgd. Previously committed allocations are 33.3 mgd leaving 72.3 mgd available to the Applicants. Whereas the contract (Agreement No. 13904) is for up to 125 mgd, a need for only 58 mgd is foreseen resulting in an overall surplus, from 91st Ave. alone, of 14.3 mgd. Additionally, approximately 50 mgd are potentially available from the Tolleson and the 23rd Ave. Plants (Findings 68, 90).

Diversion of raw sewage from the 91st and 23rd Ave. to proposed satellite treatment plants in the Phoenix area (East Mesa and the northeast) will reduce the 1985 excess at 91st Ave. over the combined requirements for PVNGS and other commitments to about 5 mgd (Finding 69).

It is estimated that the makeup required for the PVNGS condenser cooling system will be an annual average of about 56.8 mgd for three units. Allowances made to account for water lost in transporting effluent by pipeline, for losses at the reclamation plant, and for losses due to seepage and evaporation at the storage reservoir increase the average effluent requirement to 57.3 mgd (Finding 7). Plant demand, however, is not constant. In the summer months, the requirement will be greater than 57.3 mgd while in the winter, it will be less. The projected peak cooling water requirement for June 1986 for PVNGS is 70.2 mgd (Finding 13).

During the hearing, witnesses for the Applicants and the Staff testified that the scheduled effluent supply from the 91st and 23rd Avenue Plants and the City of Tolleson was more than adequate to meet the cooling needs for Palo Verde Units 1, 2 and 3. Both witnesses utilized the MAG 208 and Phoenix effluent supply studies as part of their analyses and both determined that, even based upon the more conservative MAG projections, there will be ample effluent available to cool Palo Verde Units 1, 2 and 3 during the first five years of operation (Findings 21-25).

A Staff witness calculated effluent supply by utilizing the most up-to-date MAG 208 and Phoenix projections that were available at the time he made his analysis. Using the MAG 208 projections, he calculated that in June 1986, the most critical time frame to examine insofar as effluent requirements are concerned, the 91st Ave. Plant would produce about 71.3 mgd of effluent after commitments other than Palo Verde's were subtracted. Using the projections of the City of Phoenix, he calculated that there will be 86.7 mgd of uncommitted effluent in June 1986, a quantity set by the 120 mgd of capacity of the 91st Ave. Plant. Because the projected makeup requirements for three Palo Verde units is about 70 mgd, a Staff witness concluded that both of these studies established that the effluent supply

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from the 91st Ave. Plant alone, without receiving any contributions from the 23rd Ave. Plant or from Tolleson, will be sufficient to meet Palo Verde's cooling requirements during the first five years of operation (Finding 23).

An Applicants' witness also concluded that effluent from the 91st Ave. plant alone was sufficient to satisfy Palo Verde makeup requirements for Units 1, 2 and 3. The time frame encompassed in the witness' calculations was for each month during the years 1985 through 1987. These calculations were conservative because they utilized 1979 MAG 208 predictions which showed the lowest effluent projected supply from the 91st Ave. Plant of any MAG 208 or City of Phoenix study since 1977 (Finding 91).

The Applicants further supported their position on the adequacy of effluent in months of greatest demand through reference to the June 1981 supply of effluent equal to 69 mgd from 91st Ave. and Tolleson. This is essentially the requirement at PVNGS in June 1986. Additionally, confidence was expressed in projections of the supply by the observation that the actual flow from the 91st Ave. in June 1981 was 5% greater than that projected 18 months earlier (Finding 91).

3. *Alleged Uncertainties in Availability of Effluent*

Although not conceding the accuracy of Applicants' and Staff's calculations of the requirements for makeup of the condenser cooling water, the Intervenor has not substantially attacked the analysis presented by their witnesses. Further, no serious attack has been made on the amount of effluent currently being produced or the projections of effluent predicted to be available in 1985 and subsequent years. As to the latter, an Intervenor's witness acknowledged that the 1981 projections made by the City of Phoenix of the quantity of effluent predicted to be available in 1985 were reasonably accurate. He also expressed the opinion that the 91st Ave. Plant would produce enough effluent for the operation of all three Palo Verde units (Finding 24).

Intervenor did, however, attempt to establish some uncertainty in the effluent supply resulting from (i) the construction of new regional and local or satellite sewage treatment plants that could divert sewage from treatment at the 91st Ave. Plant (Findings 98, 99), and (ii) exchanges of effluent for Indian allotments of CAP water (Finding 94-96). However, in light of the testimony of Intervenor's witness, such attempts are not persuasive.

First the evidence shows that the May, 1982 MAG Update calls for the further expansion of the 91st Ave. Plant to a capacity of 150 mgd by 1987 and expansion of the 23rd Ave. Plant from 37.2 mgd to 50 mgd shortly thereafter (Findings 21, 92, 93). It also includes two new local or satellite sewage plants (Arrowhead and North Scottsdale plants). Thus, Intervenor's concern is directly refuted by the 1982 MAG Update which projects that there will be an increased amount of

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effluent available in the future and that any new plants should not substantially divert effluent from the 91st and 23rd Ave. Plants (Findings 97, 98).

With respect to new regional plants which divert sewage from the 91st Ave. Plant, a representative of the Arizona Municipal Water Users Association testified that there were no plans to construct such plants, that they were merely topics of conversation among municipalities and that they would not be necessary until the turn of the century. In any event, the May, 1982 MAG Update indicates that, even if such regional plants were in existence in 1985, further expansion of the 91st Ave. Plant will be required, thereby providing more than enough effluent to meet Palo Verde requirements (Findings 97, 98).

A further assurance that there will be sufficient effluent for Palo Verde is a contractual provision in Agreement 13904 specifically providing that Cities are not allowed to install new wastewater treatment plants that will impair their ability to deliver effluent. (Findings 94, 100, 101).

The Intervenor also contended that the Palo Verde effluent supply may be jeopardized by a proposed exchange of 100,000 afy of municipal effluent to certain Indian tribes as part of the CAP program. The Board does not believe this potential exchange threatens the Palo Verde effluents. The record establishes that this exchange is not intended to take place unless prior effluent commitments are satisfied (Finding 102). Even if this were not the case, such exchanges would not affect the Palo Verde units during the first five years of operation since the proposed Indian exchanges will not take place until after the year 2000 (Findings 102-106)

a. The Renegotiation of Agreement No. 13904

Another uncertainty listed by the Intervenor is that the Palo Verde effluent contract (Agreement No. 13904) has until recently been the subject of renegotiation by the parties. The potential exists, according to the Intervenor, that possible future renegotiations might adversely affect the amount of effluent which is to be supplied to Palo Verde. There is no compulsion for Applicants to jeopardize this supply, since there is no provision in Agreement No. 13904 which permits termination earlier than its specified term. Any adjustments to the amounts of effluent presently contracted would presumably affect only quantities in excess of that which is necessary for Palo Verde (Findings 107, 108).

4. Sources of Water to the Cities

Basic to any discussion of the allocation and distribution of the output from wastewater treatment plants in the Phoenix area is the consideration of the raw water resources available to the Cities. Water is supplied to Phoenix and adjacent municipalities from several sources including the Salt River Project Agricultural Improvement and Power District (SRP), "gate-water" inventory, wells, private water companies, and the CAP.

a. Salt River Project

The major part of the Phoenix metropolitan area is situated in the Salt River Valley above the confluence of the Salt and Gila Rivers. The drainage from the watersheds of the Salt River, Tonto Creek and the Verde River, which joins the Salt a few miles east of the area, provides the surface water supply to the SRP. Collectively, these watersheds cover an area of about 13,000 square miles. The SRP delivers water to approximately 238,000 acres of which some 40% are used for commercial agriculture (Findings 109, 110).

Six impoundments (on the Salt and on the Verde) capture and store runoff in the watersheds, providing a total capacity of about two million acre feet (Finding 110). These dams were built and financed by the federal government for irrigation of the "member lands" within an area known as the Salt River Reservoir District (SRRD). The "member lands" are those lands whose owners joined the Salt River Valley Water Users Association (SRVWUA) organized in 1903, and pledged their lands for the repayment of the cost of the dams and other facilities constructed by the federal government (Finding 111).

As originally constructed, the Horseshoe Dam on the Verde River had a capacity of nearly 0.060 maf. Subsequently, the City of Phoenix invested its funds in the installation of gates above the spillway, thereby effectively increasing the height of the dam and, accordingly, increasing the impoundment limit to more than 0.130 maf. The ownership of this increment or any fraction thereof, after correction for evaporative and silting losses, rests with the City and carries with it the right of disposition in any manner elected by the City. A drawdown of the level from behind the gates may, for example, be distributed by SRP in which case, through a system of measurements and accounting, Phoenix obtains an incremented "gate-water" credit. As of late January 1982, the City's credit balance was less than 0.016 maf; on April 1st, it had increased to nearly 0.089 maf (Finding 112).

Intervenor asserts that the quality of the surface water supply to the Phoenix area may be impaired by leachants from landfills arising from Salt River intrusions during periods of flooding such as those which occurred during 1978, 1979 and 1980. It is estimated that, over a 20-year period, 0.7 to 0.8 maf of groundwater will be contaminated in this manner to an extent which would render it unusable as drinking water without additional treatment (Findings 113, 114). The Board opines that if additional treatment is required, it will be provided.

The Salt River Project collects water from a large area within Central Arizona and distributes it for industrial, agricultural and domestic uses over a quarter of a million acres in and around Phoenix. The Project has been established for nearly four score years and has successfully administered its responsibilities. Its assets are strong and, in this Board's judgment, they will contribute significantly to the coolant makeup requirements of the PVNGS.

b. Wells and Private Water Companies

Surface waters collected in the Salt and Verde watersheds constitute approximately 60% of the water resources of the SRP. The remaining 40% is developed water consisting of groundwater within SRRD pumped from 249 deep wells owned and operated by the SRP (Finding 115).

The Intervenor also raised uncertainties in the groundwater supply. One of these concerns was the fact that there is a new Groundwater Management Act in the Phoenix area that can potentially limit the number of new wells that may be drilled. However, the evidence of record does not establish a likelihood that the Cities will be unable to drill sufficient wells to meet their water supply needs. Under the new Act, the Department of Water Resources of the State of Arizona has no authority to deny a permit to a City to drill a new well as long as the drilling takes place in its service area. Furthermore, Cities are not prohibited from expanding their service areas. Cities are also allowed to withdraw from any particular service area well that amount of groundwater necessary to supply its customers (Findings 116-119).

Another alleged uncertainty raised by the Intervenor concerned possible groundwater contamination in the Phoenix area. The quality of well water in the urban areas has deteriorated in recent years leading to the removal of some wells from service. Investigations required in 1981 disclosed twelve wells located in the Phoenix area and within the Salt River Project to be contaminated with trichlorethylene (TCE) in amounts grossly in excess of the limit established for potable water (Finding 120).

Dibromochloropropane (DBCP), a constituent of pesticides, has been found in 26 wells in Maricopa County at concentrations greater than the limit established to preclude an excess cancer risk. Two wells were removed from service (Finding 121).

An unspecified quantity of water is available in the area from other wells, some city-owned and some privately owned. However, the evidence fails to establish that there will be a substantial number of contaminated wells or loss of groundwater in the future (Findings 122, 123). In addition, most contamination problems can be solved by such remedial action as: (a) contamination prevention programs (*e.g.*, meeting EPA standards for waste disposal), (b) the treatment of contaminated water to make it suitable for human consumption, and (c) the cleanup of landfill areas. Furthermore, if a well becomes contaminated, a City also can take corrective measures by drilling another nearby into the aquifer to replace the lost well (Finding 124).

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c. *Central Arizona Project*

The alleged uncertainties raised by the Intervenor regarding the CAP water supply to the Phoenix area were largely refuted by the testimony of Applicants' witnesses.

The CAP is a Congressionally authorized endeavor designed to distribute water from the Colorado River to which the state of Arizona is entitled. The project is comprised essentially of three sections of aqueduct, with associated pumping capability, extending from the River at Lake Havasu to a reservoir between Phoenix and Tucson. The section west of Phoenix is nearing completion and is expected to be in service by 1985. Use of the entire project is scheduled for 1989 or 1990 (Finding 125).

By order of the Supreme Court in the case of *Arizona* v. *California*, 373 U.S. 546 (1963) Arizona is entitled to 2.8 mafy of Colorado River water plus 46% of any flow above 7.5 mafy. Arizona is currently using or has a commitment to use 1.2 mafy in areas along the river. The incremental 1.6 mafy is proposed for the Phoenix-Tucson area (Finding 126).

The use of CAP water is to be allocated to municipal industries, to pure industry (essentially mines and electric generation), to agriculture and, in small quantity, to recreation. However, no CAP water has been allocated for personal and industrial use within the SRP, allegedly because no need has been foreseen due, in turn, to the transition of much property from agricultural to urban use and a concomitant decrease in water requirements (Findings 127, 128).

The disposition of water from the Central Arizona Project is addressed in the Final Environmental Impact Statement (FEIS) of the Project, prepared by the U.S. Department of the Interior. Included therein is the concept of water exchange with the Indian tribes whereby, for instance, raw CAP water assigned to Indians and intended for irrigation may be traded to municipalities for treated effluent from sewage treatment plants. The effluent is generally suitable for irrigation of some crops. The exchange ratio is often such that more effluent would be supplied to the Indians than CAP water would be diverted to the municipalities. In such an exchange, municipalities enhance their supply of potentially potable water, and Indian Tribes augment their water sources with an increment of lower quality but which is nonetheless satisfactory for irrigation. Effecting these exchanges will divert effluent from other uses (Finding 96). However, in order to minimize transportation and to introduce some efficiency into the exchange process, the source of effluent must be located closer to the area of use (the Indian reservations) than are the 91st and 23rd Ave. Plants (Finding 129). Furthermore, it is anticipated that significant exchanges of CAP water for treated effluent will not be necessary until some time in the next century. One witness opined that exchanges may be necessary earlier than the 1990s (Finding 130).

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The supply of water to the CAP depends upon the flow in the Colorado River and the established demands of other users. The basic supply from the Colorado River is about 14.9 mafy. The Colorado River Compact allots 7.5 and 8.5 mafy to the Upper and Lower Basins, respectively, and 1.5 mafy to Mexico under a 1944 treaty, an amount, *in toto*, greater than the nominal supply. The Upper Basin States include portions of Colorado, Wyoming, Utah and New Mexico. The Compact, however, states that the flow to the Lower Basin shall not be less than 75 maf during any consecutive 10-year period. Further, the Upper Basin currently consumes approximately 5.8 maf annually, with an expected maximum of 7.5 maf (Finding 131).

From the allocation to the Lower Basin, there is a 90% probability that a supply of 1.6 maf will be available to CAP in 1985 (decreasing to perhaps 1.3 maf in the year 2034) under average conditions on the Colorado River. A statistical study says that an absolute annual minimum of 0.63 maf will be available to CAP based on historic conditions of worst runoff from the Colorado Watershed. The study set 0.80 maf as the amount likely to be available during each of two out of three years. Current storage in the Colorado River makes probable the 1.6 mafy supply to CAP in the mid-1980s even though the region were to experience five or so drought years (Finding 132).

In partitioning the CAP water, a conservative 1.3 mafy was assumed as the supply. The 0.5-mafy increment above the likely annual amount was assigned to non-Indian agriculture. Of the remainder, 0.16 mafy was allotted to the Indians and 0.64 mafy to non-Indian municipal and industrial (M&I) use. The CAP allocation to the Cities is 0.17 mafy, of which 0.12 mafy will go to Phoenix (Findings 133, 134).

Additionally, the Department recommended to the Secretary of the Interior, who oversees the distribution of CAP water, that 0.06 maf be allotted in the year 2005 to the Arizona Public Service/Salt River Project for use in electric power generation. This quantity is in addition to the 140,000 afy of effluent placed under option by Agreement 13904, Section 4 (Finding 135).

The Department's proposal also includes the allotment of 0.31 maf annually to 12 Indian tribes, 0.64 mafy to 85 M&I entities (including 0.06 mafy for power generation) and the remainder to 23 irrigation districts and farming operations. During shortages, CAP deliveries to all miscellaneous and non-Indian agricultural users will be the first affected (Finding 136).

Additional annual commitments of Colorado River water within Arizona consist of about 1.2 maf diverted to Indian reservations and to reclamation projects along the Lower River. Together with the expected 1.3 to 1.6 maf allocation to CAP, the amount of river water available to Arizona will amount to about 2.8 mafy. The current diversion into California is 5.1 mafy. The U.S. Supreme Court's decision in *Arizona* v. *California* reduces this amount to 4.4 mafy, so the

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CAP will not create an inordinate additional demand on the Colorado River (Finding 137).

As an adjunct to the Supreme Court's decision in *Arizona* v. *California*, a Special Master reviewed a claim by several Indian tribes for water in excess of the amount granted. One witness has testified that the Special Master's decision awarded 0.19 mafy to the tribes. A different witness set the quantity at 0.12 mafy at a priority higher than that of CAP. The Special Master's Decision has not yet been accepted by the Court (Finding 138).

One of Intervenor's witnesses has speculated that, contrary to the current situation, the Upper Basin will require its full annual allotment of 7.5 mafy on the basis of anticipated rapid development within the states served. Less water for Arizona might result. Intervenor also argues that the future distribution of CAP water remains uncertain, because at this time only the portion of the master contract having to do with Indian rights has been signed by the Secretary of the Interior (Findings 139, 140).

The Central Arizona Project, discussed in the foregoing remarks, will transport Colorado River water into Central Arizona where it will serve as a viable adjunct to local sources of coolant for the PVNGS. The availability of CAP water in the Phoenix area is scheduled within the time frame established by the onset of the period of greatest demand for coolant makeup. The Board views CAP water as a significant supplemental supply.

5. Adequacy of Contemplated Supplies

Witnesses for both the Applicants and the Intervenor asserted that the quantity of water available to the Phoenix area from a variety of sources will be sufficient for the needs presently foreseen over the next decade and a half.

A witness for the Intervenor testified that the water supplies for the cities appear adequate over the next 15 years if the CAP water is delivered, if there are not water shortages on the Salt and the Verde Rivers, if cities may tap available groundwater resources near their service areas, if there are no major complications with Indian water rights and if water may be purchased and transported from elsewhere (Finding 141).

A witness for the Applicants testified that the amount of water available in the Phoenix metropolitan area from the SRP, from the CAP and from groundwater is adequate to meet the municipal and industrial needs over the next 50 years if a meaningful conservative program, now required by law, is in place, if the CAP has been completed into this area, if water may be added to the CAP from the groundwater basins it crosses, and if high priority agricultural water can be purchased in the event of severe shortages in the Colorado River (Finding 142).

The reuse of wastewater treatment plant effluent for electrical power generation is a relatively high economic disposition of that effluent and is superior to most potential uses (Finding 143).

The Water Supply Plan of the City of Phoenix, in describing the effects of conservation and of the well drilling program, predicts that a positive gate-water balance will be retained at least through 1985, when CAP water is expected to arrive (Finding 144).

An accounting of the 1981 water use and availability experience within the SRP shows that the supply exceeded the need by about 30% corresponding to about 270,000 mg (Finding 145).

D. The Indian Community Lawsuit

Prior to and during the hearing, the Intervenor sought to expand the scope of the issue in controversy to include the question of the validity of Agreement No. 13904, the contract for the major source of effluent required for condenser cooling water makeup at Palo Verde. Intervenor argues that the validity of Agreement No. 13904 is uncertain because it contravenes certain reclamation laws of the United States as alleged in a lawsuit filed on January 18, 1982 in the United States District Court for the District of Columbia (Civil Action File No. 82-0145). The complaint filed by the Salt River Pima-Maricopa Indian Community against the United States and the Secretary of the Interior, seeks to have the court require the Secretary to make certain determinations under several reclamation laws which would augment the supply of water to the Indian Community. One of the determinations which the Secretary is asked to make is whether the Cities, which are signatories to Agreement No. 13904, have the authority to sell wastewater effluent derived from water captured under such reclamation laws.

By motions to defer issuance of a notice of this hearing and for its postponement, the Intervenor attempted to inject the substance of the Indian Community's claims into this proceeding. The Board ruled, however, that the issue of the validity of Agreement No. 13904 would not be accepted and denied the admissibility of evidence respecting the Indian Community's claims in this proceeding.[7]

The Board declined to consider the issues related to the Pima-Maricopa lawsuit on the basis that the Commission is not obligated under NEPA to consider all issues which are currently the subject of litigation in other forums and which one day in the future might have an impact on the amount of effluent available to Palo Verde. The District Court has jurisdiction to enforce Indian water rights and this Board does not. The Board is aware that the Department of the Interior and its Secretary

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[7] *See* Board Memorandum and Order, April 13, 1982; Board Memorandum and Order, June 4, 1982 (LBP-82-45, 15 NRC 1527); and Board Memorandum and Order, August 12, 1982 (LBP-82-62, 16 NRC 565).

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are contesting the Indian Community's claims. Under the circumstances it would be improper for this Board to entertain a collateral attack upon any action or inaction of sister federal agencies on a matter over which the Commission is totally devoid of any jurisdiction.

In addition to not attempting to rule upon the issues involved in Indian water rights, it also would be wrong for this Board to prevent the Palo Verde Units from operating until the issues in the Pima-Maricopa lawsuit are resolved. Although this Commission will take cognizance of activities before other legal tribunals when the facts so warrant, it should not delay its licensing proceedings or withhold a license merely because some other legal tribunal might conceivably take future action which may later impact upon the operation of a nuclear facility. *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-78-14, 7 NRC 952, 958 at fn. 5 (1978); *Wisconsin Electric Power Company* (Koshkonong Nuclear Plant, Units 1 and 2), CLI-74-45, 8 AEC 928, 930 (1978); *Southern California Edison Company* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-171, 7 AEC 37, 39 (1974); and *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 748 (1977). The outcome in the Pima-Maricopa lawsuit proceeding, as it might affect Palo Verde, is most speculative since there is no way of predicting how that proceeding would affect the Palo Verde effluent supply. In addition, many years may expire before that litigation is resolved.

Accordingly, the Board affirms its prior rulings that the validity of Agreement No. 13904 is not a justiciable issue in this proceeding, because (a) it does not have jurisdiction to resolve such matter, (b) comity requires the Commission to accept the position taken by its sister federal agencies as well as by other state and local governmental authorities, (c) the issue is pending in litigation before a federal district court, (d) the outcome of such litigation and its effect, if any, on the operation of one or more of the Palo Verde units is speculative and conjectural, and (e) if it is ultimately concluded some time in the future that alternate sources of condenser cooling water are required to permit operation of all Palo Verde units at their full capacities, the Commission will have ample opportunity to evaluate and weigh the environmental impacts and cost-benefits of utilizing such alternate sources.

E. Applicable Legal Standard

Basically, the Intervenor's position in this proceeding is that the Palo Verde units should not be allowed to operate because there are uncertainties in the future water supplies in the Phoenix area which may at some later date create a need to invoke Section 21 of Agreement No. 13904. The main argument presented is that such uncertainties potentially may cause water shortages and therefore the effluent

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contracted for under the Agreement may not be available for the nuclear generating station. The assertion clearly is speculative and conjectural. The Board concludes that there is no legal basis for such an approach.

In the event of a cooling water shortage caused by a loss of effluent from the 91st and/or 23rd Ave. Plants, the Palo Verde reactors can be safely shut down by the facilities' ultimate heat sinks. (Findings 57-67). Insofar as environmental matters are concerned, under the National Environmental Policy Act (NEPA) there is no legal basis for refusing Palo Verde its operating licenses merely because some environmental uncertainties may exist in Palo Verde's future coolant supply from the Cities. Where environmental effects are remote and speculative, agencies are not precluded from proceeding with a project even though all uncertainties are not removed. *State of Alaska* v. *Andrus*, 580 F.2d 465, 473 (D.C. Cir. 1978) *vacated in part, sub nom., Western Oil and Gas Association* v. *Alaska*, 439 U.S. 922 (1978); *NRDC* v. *Morton*, 458 F.2d 827, 835, 837-838 (D.C. Cir. 1972). Moreover, moot or farfetched alternatives need not be considered under NEPA. *See Vermont Yankee Nuclear Power Corp.* v. *Natural Resources Defense Council*, 435 U.S. 519 (1978); *Natural Resources Defense Council* v. *Morton*, 458 F.2d 287, 837-838 (D.C. Cir. 1972); *Life of the Land* v. *Brinegar*, 485 F.2d 460 (9th Cir. 1973), *cert. denied*, 416 U.S. 961 (1974).

Environmental uncertainties raised by Intervenors in NRC proceedings do not result in a *per se* denial of the license, but rather are subject to a rule of reason. The test cited by the Appeal Board in *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41 (1978) is not whether the uncertainty is "theoretically possible" but rather ". . .whether it is reasonably probable that the situation will obtain." (*Id.*, at 48).

The "reasonable probability" test established in *Prairie Island* is substantially similar to the test used by the Licensing Board in *Public Service Company of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), LBP-78-26, 8 NRC 102, 120 (1978) *aff'd* ALAB-573, 10 NRC 775 (1979) where a Licensing Board decided there need only be a "reasonable assurance" that a nuclear facility would have sufficient cooling water. *Black Fox* is on all fours with the situation here because both cases deal with the adequacy of cooling water supply. If anything, the cooling water availability in *Black Fox* was much more tenuous than here because the City of Tulsa had the right to terminate its water supply contract for the reactor at will. Moreover, the contention in *Black Fox* challenged the adequacy of coolant for the entire life of the plant as opposed to the situation challenged in Contention 5 which is limited to the first five years of the units' operations. Despite the fact that there were a number of uncertainties, the *Black Fox* Board found there was "reasonable assurance" that the Applicant would obtain sufficient water. This Board likewise concludes that the proper test for cooling water availability should be whether there is a "reasonable assurance" of its availability.

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As part of the Intervenor's rigid approach regarding effluent sufficiency, she would also assume for purposes of calculating the required effluent that the Palo Verde facility be operational almost one hundred percent of the time without any downtime allowed for temporary effluent shortage. She bases this standard on the testimony of her witness, William Lorah, who stated that there should be an assured full supply of cooling water for Palo Verde more than ninety-five and as close to one hundred percent of the time as possible. Mr. Lorah based his opinion on the fact that there may be adverse economic effects if Palo Verde is not always in operation.

We cannot agree with that argument. Although it would be desirable from an economic viewpoint for Palo Verde to be operational one hundred percent of the time, this does not mean that the Palo Verde facility, which is substantially completed, should not receive an operating license if there is the possibility that it may not be able to operate full time in the future for any reason. As substantiated by the Palo Verde FES which lists great economic advantages by allowing Palo Verde to operate, it is obvious that some return on investment is better than no return at all.

The Intervenor's economic arguments are also incorrect as a matter of law. Originally Congress was not concerned that this Commission assess whether a proposed nuclear plant would be the most financially advantageous way for a utility to satisfy its customers' needs for power. The Commission's involvement in financial matters was limited to determining whether Applicants were able to build and operate a plant without compromising safety because of pressing financial needs. With the passage of NEPA, cost-benefit balancing is now required, but only if the proposed nuclear plant has environmental disadvantages in comparison to possible alternatives. *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-458, 7 NRC 155, 162 (1978). *See also: Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-339, 4 NRC 20, 48 (1976); *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, 2B), ALAB-367, 5 NRC 92, 102-03 (1977); *Illinois Power Company* (Clinton Power Station, Units 1 and 2), ALAB-340, 4 NRC 27, 48 (1976). This cost-benefit comparison has been limited further by the Commission's recent amendment to 10 CFR Part 51 which precludes alternative energy source issues from being considered in operating license proceedings. 47 *Fed. Reg.* 12940 (March 26, 1982). Under this recent amendment to Part 51, the Intervenor is estopped from arguing that there are alternative energy sources which are superior to Palo Verde. She is also precluded from asserting arguments regarding what percent of the time the plants should be operational. Except to the extent they are included in comparisons of possible alternative energy sources or they bear upon the Applicants' ability to safely operate the plant, economic considerations of this nature are not reviewable by the Commission. This Commission's regulatory authority does not extend to the oversight of Applicant's business

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judgments. *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-244, 8 AEC 857, 862 (1974).

Intervenor's reliance on *Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), LBP-74-44, 7 AEC 1098 (1974), where the licensing board imposed a lengthy condition on the issuance of construction permits requiring the applicant to assure the availability of compensating water storage at the time of initial power operation, is misplaced. In that case, the licensing board concluded that without such water storage, the applicant might not be able to achieve year-round full power operation. (*Id.* at 1128, 1152). Upon exceptions to the Licensing Board's initial decision, the Appeal Board practically eliminated the condition. *Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), ALAB-262, 1 NRC 163, 205-06 (1975). Finding that the cost-benefit analysis for the Limerick plant tipped in favor of granting the construction permits without the need for a water storage reservoir, the Appeal Board deleted the requirement that compensating water storage be available *at the time of initial power operation*. Noting, however, that a condition similar to the one requiring compensating water storage had been proposed by the applicant and that the applicant had already taken the procedural steps to obtain approval of such storage, the Appeal Board revised the condition to provide that the applicant was to take the necessary steps to provide compensatory water storage at the "earliest practicable time." (*Id.* at 206).

F. NEPA Considerations

At the end of the second week of the Palo Verde operating license hearing, the Intervenor for the first time contended that this Board had a duty under the National Environmental Policy Act (NEPA) to consider cost-benefit questions regarding Contention 5. At that time she specifically attempted to question her witness about costs for alternative cooling water supplies if the Palo Verde effluent is not available. Tr. 1440, 1463. This Board ruled that Contention 5 is solely concerned with whether there is an assured source of effluent for Palo Verde and that this line of questioning is beyond the scope of the issues admitted. Tr. 1440.

Except perhaps in the case of *sua sponte* considerations, an issue must be properly placed by a party and admitted as a contention before a Board will consider cost-benefit determinations at the operating license review. The Intervenor never attempted to add this question until well into the hearing. No good cause was furnished by the Intervenor as to why this matter was first raised at that late date. Moreover, the remaining factors of 10 CFR §2.714 concerning late-filed contentions were never addressed by the Intervenor and accordingly the Intervenor failed to meet the burden placed upon her by the Regulations.

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The Staff has already made its cost-benefit balancing of the Palo Verde Units. Table 2.1 (page 2-2) of the Staff Ex. 1 (FES) demonstrates that there will be a savings in the year 1987 of 1,900 million dollars by having the three Palo Verde Units operational as opposed to having to buy replacement power. The FES also includes in its analysis the determination that the Palo Verde station ". . . has already been essentially constructed" and ". . . the economic and environmental costs associated with the construction of the station that have been incurred must be viewed as sunk costs in any prospective assessment." (*Id.* at 3-1). As reflected by these determinations in the FES, if Palo Verde does not receive its operating license and is forced to stand idle, as the Intervenor recommends, there will be huge economic losses. On the other hand, even if the units at a later date are forced to shut down by not receiving sufficient effluent, there will at least have been the economic benefit of being able to operate during the interim period. Thus, since the "environmental costs" are already sunk costs, the FES clearly demonstrates that the environmental cost-benefit balancing greatly weighs in favor of granting the Palo Verde license.

The Intervenor's NEPA cost-benefit arguments are also inappropriate because they include alternative energy source issues. Tr. 1463. Such arguments are precluded by a new Commission Rule amending 10 CFR Part 51, effective April 26, 1982, which provides that, for purposes of NEPA, need for power and alternative energy source issues are not to be considered in operating license proceedings for nuclear power plants. 47 *Fed. Reg.* 12940.

G. Unresolved Safety Issues

The Staff reviewed each of the relevant unresolved safety issues and the associated Task Action Plans that address their resolution. The SER contains a discussion and summary of each issue. The Board concludes that the Staff has taken each of the pertinent generic safety issues into account in a plausible manner and there is reasonable assurance that the PVNGS can be operated prior to the ultimate resolution of these issues without endangering the health and safety of the public (Finding 146).

IV. CONCLUSION

On the basis of the evidence of record, the Board finds that there is reasonable assurance that there will be a sufficient supply of effluent from the 91st Avenue and the Tolleson Plants to meet the operational requirements of the Palo Verde units, that there is reasonable assurance that the sources of water available to the Cities during the first five years of operation of all Palo Verde units and beyond are sufficient so that the occurrence of an event which could trigger Section 21 of

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Agreement No. 13904 is very remote, that the estimated requirements of effluent for condenser cooling are not understated and that effluent is not required for the safe shutdown of the Palo Verde units.

The matters examined during the evidentiary hearing which are not discussed in this Opinion were considered by the Board and found either to be without merit or not to affect our decision herein. Findings of fact and conclusions of law which are annexed hereto are incorporated in the Opinion by reference as if set forth at length. In preparing its findings of fact and conclusions of law, the Board reviewed and considered the entire record and the findings of fact and conclusions of law proposed by the parties. Those proposed findings not incorporated directly or inferentially in this Initial Decision are rejected as being unsupported by the record of the case or as being unnecessary to the rendering of this decision.

The Board having considered and decided all matters in controversy among the parties related to the operation of the Palo Verde Nuclear Generating Station, Units 1, 2 and 3 would now be in a position to authorize the Director of Nuclear Reactor Regulation to make such additional findings on uncontested issues as may be necessary to determine whether or not to issue full-term licenses for the three units.

However, in view of the Board's Memorandum and Order entered on this date granting the October 14, 1982 petition to intervene filed by West Valley Agricultural Protection Council, Inc., and the reopening of the record ordered therein for Units 2 and 3, the Board at this time can only authorize the Director to issue an operating license for Unit 1.

All of the findings of fact and conclusions of law set forth in this decision apply with full force and effect to all three Palo Verde Units and will be incorporated into a subsequent decision respecting Units 2 and 3 after the closing of the reopened record concerning Units 2 and 3.

V. ORDER

WHEREFORE, IT IS ORDERED that the Director, Office of Nuclear Reactor Regulation, is authorized upon making requisite findings with respect to matters not embraced in this Initial Decision in accordance with the Commission's regulations, to issue to Applicants an operating license for a term of not more than (40) years, authorizing operation of the Palo Verde Nuclear Generating Station, Unit 1. Such license may be in such form and content as is appropriate in light of such findings, provided that such license is consistent with the conclusions of the Board herein.

IT IS FURTHER ORDERED, in accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785, and 2.786, that this Initial Decision shall become effective and shall constitute, with respect to the matters covered herein, the final action of the Commission forty-five (45) days after the date of issuance thereof, subject to any review pursuant to the above-cited Rules of Practice.

Exceptions to this Initial Decision may be filed within ten (10) days after its service. A brief in support of the exceptions shall be filed within thirty (30) days thereafter [forty (40) days in the case of the Staff]. Within thirty (30) days of the filing and service of the brief of any appellant [forty (40) days in the case of the Staff], any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

Robert M. Lazo, Chairman
ADMINISTRATIVE JUDGE

Richard F. Cole
ADMINISTRATIVE JUDGE

A. Dixon Callihan
ADMINISTRATIVE JUDGE

[Appendix B has been omitted from this publication but may be found in the NRC Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.]

VI. FINDINGS OF FACT

1. The Applicants in this administrative proceeding are (1) the Arizona Public Service Company; (2) the Salt River Project Agricultural Improvement and Power District (hereinafter "SRP"); (3) Southern California Edison Company; (4) El Paso Electric Company; (5) the Public Service Company of New Mexico; and (6) the Southern California Public Power Authority.

2. Other parties to the proceeding are the Staff of the United States Nuclear Regulatory Commission (hereinafter "Staff") and Ms. Patricia Lee Hourihan (hereinafter "Intervenor"). The Intervenor was granted party status pursuant to the provisions of 10 CFR §2.714 following the filing of a request for hearing and a petition for leave to intervene.

3. The Atomic Safety and Licensing Board conducting this proceeding granted a motion by the Attorney General of the State of New Mexico to participate

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as an interested state agency pursuant to the provisions of 10 CFR §2.715(c). The New Mexico Attorney did not take any position in the proceeding, raise any issues or participate in the hearing.

4. Applicants seek three facility operating licenses which would authorize the Applicants to possess, use and operate Palo Verde Nuclear Generating Station, Units 1, 2 and 3 (hereinafter "PVNGS"), three pressurized water nuclear reactors located on Applicants' site in Maricopa County, Arizona, approximately 36 miles west of the City of Phoenix. Permits to construct the three reactor units, each of which is designed to operate at a rated output of 1,270 megawatts of electrical power, were issued in May 1976.

5. One contention (Contention No. 5) is in issue in this proceeding. That contention in its original form stipulated to by the parties and admitted by the Board for litigation, states:

> "Applicants will not have an assured supply of usable treated municipal effluent for cooling purposes for Unit 3 of PVNGS during months of peak reactor need for the first five years of operation."

During the course of discovery on this issue, the Intervenor withdrew her challenge respecting the suitability or quality of the effluent except to the extent that effluent quality might impact the quantity of effluent required for condenser cooling.

6. At the outset of the hearing, Contention No. 5 was expanded to include the question of: (i) whether there is an assured supply of effluent for all three units rather than just for Unit 3; (ii) whether a greater amount of effluent will be required for the three Palo Verde units if there is a poorer quality of effluent than that which is presently expected; and (iii) whether or not the supply of effluent was critical to the safety of operation of the Palo Verde units, including the safe shutdown of the units under either normal or abnormal conditions, *i.e.*, what is the relationship, if any, between the ultimate heat sink and the treated effluent to be used for condenser cooling?

7. The average annual condenser cooling water makeup required by each of the three units at PVNGS has been estimated to be 19.1 mgd (21,400 acre-feet/year), or 57.3 mgd (64,200 acre-feet/year) for all three units. The assumptions used in calculating this requirement are as follows:

a. Each Palo Verde unit will operate at a capacity factor of 95% of rated power for 11 months each year and will experience a one-month outage each year for refueling and maintenance.
b. There will be no recovery of the blowdown from the circulating water system.
c. Average ambient meteorological conditions prevail.
d. Concentrations of dissolved solids in the circulating water system will be 15 times those of the influent.

Using the above assumptions, the breakdown of average annual cooling water losses per unit is as follows:

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• Circulating Water System Evaporation	17.71 mgd
• Circulating Water System Drift	0.03 mgd
• Circulating Water System Blowdown	1.20 mgd
• Onsite Reservoir Evaporation	0.13 mgd
• Miscellaneous Pipeline and Water Reclamation Plant Losses	0.03 mgd
Total	19.1 mgd

Bingham, ff. Tr. 920 at 2; App. Ex. X at Fig. 3.3-1; Tr. 2592 (Bingham).

8. Water requirements for PVNGS were calculated using monthly averages of consumptive use based on average monthly meteorological conditions. Average monthly meteorological conditions were calculated from arithmetic daily averages. The monthly water requirements were summed to obtain an average annual requirement. Bingham, Tr. 923-924; App. Ex. T at WGB-2, WGB-3.

9. The monthly demand for coolant for the PVNGS will be dependent on the average capacity factor at which the three plants operate in any month and on the atmospheric conditions. Coolant will be supplied by effluent from wastewater treatment plants in the Phoenix area. Gonzales, ff. Tr. 2522 at 1.

10. In general, the quantity of makeup effluent required for the cooling of PVNGS is greatest during the summer months when losses due to evaporation and the demand for electricity are greatest. *Id.*

11. Assuming that all three plants are operating at a constant capacity factor and with uniformity in other determining conditions, the peak requirement for cooling water will be in the month of June. Gonzales, ff. Tr. 2522 at 9; App. Ex. X, Table 3.4-2 at 3.4-5, 3.4-6.

12. PVNGS Unit 3 is scheduled for commercial operation in May, 1986. Hulse, ff. Tr. 404 at 2.

13. The amount of effluent needed for condenser cooling at 95 percent load varies throughout the year between 53 and 70 mgd. The makeup required for June 1986 has been estimated to be about 70.2 mgd. (Gonzales, ff. Tr. 2522 at 2, 9; Tr. 928 (Bingham); App. Ex. T at WGB-4.) This estimate is based on 1973-74 onsite meteorological data and is conservative. Makeup water requirements predicted by use of more extensive meteorological data (65 years of data from Buckeye and Gila Bend; 40 years from Litchfield Park; 30 years from Phoenix and 8 years additional data from the Palo Verde site 1974 to 1981) indicates that the actual requirements will be perhaps 20 percent smaller. Tr. 1205 (Bingham).

14. The sources of makeup coolant to replace losses in the circulating water system resulting from evaporation, drift and blowdown will be effluent from the 91st Avenue Wastewater Treatment Plant and the Tolleson Wastewater Treatment Plant. This effluent will be further processed at the Water Reclamation Plant (WRP) located at PVNGS prior to being stored in the 750-million-gallon capacity onsite reservoir. Bingham, ff. Tr. 920 at 2; Gonzales, ff. Tr. 2522 at 2, 3.

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15. The Circulating Water System (CWS) is provided to remove thermal energy which has not been converted into electrical energy. The CWS is an integral part of all steam electric generating plants and consists of the main condenser, cooling towers, circulating water pumps, a chemical injection system, and a makeup and blowdown system. App. Ex. X at 3.4-1.

16. The design core thermal output of each nuclear steam supply system is 3800 megawatts. Approximately one-third is converted into electrical energy. The unconverted thermal energy is transferred via the main condenser to the circulating water system and to the mechanical draft cooling towers where it is dissipated to the atmosphere. *Id.* at 3.2-1, 3.4-1.

17. Each individual unit condenser removes approximately 8900 million Btu per hour from the turbine exhaust steam at 100% power. *Id.* at 3.4-1. The design capacity of each unit's cooling towers to dissipate heat to the atmosphere is 9250 million Btu per hour. *Id.* at 3.4-2, 3.4-3.

18. The effluent prepared for use in the CWS and stored in the onsite reservoir will be further treated in the CWS, as needed. Provision is made for the addition of chlorine, sulfuric acid, foam control chemicals and scale inhibitors. *Id.* at 3.4-4.

19. Makeup to the CWS is required due to blowdown and to evaporation and drift from the cooling towers. Makeup is taken from the onsite reservoir. Blowdown from the CWS is directed to the onsite evaporation ponds. App. Ex. X at 3.4-4.

20. An upper limit on the allowable concentration of dissolved solids in the coolant is necessary to retain corrosion, scaling and biological fouling within tolerable bounds. This limit determines the permissible use of coolant prior to being discarded from the system through blowdown. Quantitatively, the usefulness of coolant is expressed by the number of cycles of concentration before rejection is necessary. The number of cycles is the ratio of the chemical concentrations of the blowdown and of the water fed to the coolant system. The quantity of makeup required during operation is an inverse function of the permissible number of cycles. App. Ex. U. at WGB-6, revised May 24, 1982; Int. Ex. IX at 1; Tr. 1090 (Bingham).

21. Projections of sewage effluent production from the 91st Ave. Plant were made in 1979 by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency for the Maricopa Association of Governments. These projections appeared as the "Final Environmental Impact Statement on the Maricopa Association of Governments Point Source Metro Phoenix 208 Waste Water Management Plan" (MAG). (App. Ex. B, Table C-1). In 1979, the City of Phoenix made an independent projection. The two sets of values, in mgd, for the 91st Ave. Plant are:

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	Year						
	1980	**1983**	**1985**	**1986**	**1990**	**1995**	**2000**
MAG	84.5	98.0	102.9	105.0	113.7	124.3	137.0
Phoenix	89.5	103.6	113.0	117.8	136.7	160.3	183.8

Gonzales, ff. Tr. 2522 at 4.

An expansion of the Plant, expected to be completed in 1983, will bring its capacity to 120 mgd. Gonzales, ff. Tr. 2522 at 3. Further expansion will bring the capacity to 150 mgd by 1987 (App. Ex. LL at III-9, Tr. 2305 (McCain)).

22. The MAG report, which recorded the plans for wastewater handling in the Phoenix area through the year 2000, was updated in 1982 by incorporating changes since 1979 which will affect that planning. The changes include:

- increased population projections by MAG;
- passage of the Groundwater Management Act which places emphasis on utilizing all water resources;
- changes in planning areas for some communities;
- identification of specific large-scale developments in the area; and
- proposal to allow exchanges of effluent for Central Arizona Project water allocations. (App. Ex. LL at I-1).

23. The Phoenix predictions were based on more recent population growth estimates than were those for MAG, and may be more accurate. The flow experience in 1980 was 88.5 mgd, a figure somewhat supportive of the Phoenix prediction. Updates in 1981 of both of the above projections showed an increase in production — about five percent in the MAG projection and 15 percent in the Phoenix projection. A 1982 update shows an even slightly greater rate of production. Tr. 2524 (Gonzales). Based on the most conservative of these estimates of production trends, the Staff predicted a minimum monthly average of 106.7 mgd in 1986. Adjustment of this average for monthly variations gives a predicted minimum production of 104.6 mgd for June 1986. The corresponding maximum, based on Phoenix estimates, is 131.5 mgd. Recognition of commitments by the Plant for delivery of effluent to others reduces the Staff's prediction to between 71.3 and 86.7 mgd (0.080 and 0.097 mafy), the latter set by the nominal 120 mgd Plant capacity. Gonzales, ff. Tr. 2522 at 5 to 8.

24. The 1981 Phoenix effluent projection for the 91st Ave. Plant for 1985 is 128.1 mgd. Tr. 2327 (McCain); (see App. Ex. D). After satisfaction of the prior commitments, the amount left for PVNGS is 94.8 mgd, or 65% in excess of the average amount of effluent required to operate all three PVNGS units (McCain, Tr. at 2330, 2332-34). Commenting on the accuracy of the Phoenix effluent projections, the Intervenor witness demonstrated some confidence in the projections stating that he felt that they will prove to be generally accurate. *Id.* at Tr. 2326.

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25. Additional evidence on the availability of effluent from the 91st Ave. Plant was presented by the Applicants and provided bases for the above MAG projection. Estimates of the effluent from the 91st and 23rd Ave. Plants were made on a month-by-month basis for the years 1980 through 1986. The average of those monthly averages was then taken as the monthly availability for each of those years. Those annual projections are labeled MAG in the table of Finding 21 (App. Ex. C at Table C-1; App. Ex. B at C-1; Tr. 419 (Hulse)). The average daily effluent flow from the 23rd Ave. Plant in 1981 was 35.8 mg (40,000 af). App. Ex. E at 2; Tr. 473 (Hulse).

26. The principal constituents discharged from the 91st Avenue Plant which could cause scale formation, fouling, corrosion and/or biological growths are calcium, magnesium, silica, phosphorus and ammonia. Bingham, ff. Tr. 920 at 3.

27. During a period in 1973-74, studies were conducted to determine and characterize the principal constituents in the 91st Ave. Plant effluent which could cause scale formation, fouling, corrosion and/or biological growths. *Id.* Circulating water test studies and pilot plant process studies were also conducted. The results were used as the basis for the design of the WRP. *Id;* Bingham, ff. Tr. 2585 at 2.

28. On the basis of the 1973-74 sampling and analysis program and the results of the pilot plant process studies, the Water Reclamation Plant, as designed, consists of the following sequential processes:

a) biological nitrification via trickling filters;
b) chemical softening in a two-stage lime-soda ash treatment process;
c) removal of suspended solids by dual-media gravity filtration;
d) control of biological growth by chlorination. Bingham, ff. Tr. 920 at 3, 4.

29. Although the process design of the WRP was based principally on the 1973-74 sampling and analysis program, additional sampling and analyses were conducted on both the 91st Ave. Plant and the Tolleson Plant effluents. The results of the 1973-74 studies as well as these additional sampling surveys are summarized in Table 1 (*see* following page). The additional sampling and analysis (91st Ave. Plant during 1976-1980 and Tolleson in 1982) confirmed the constituent concentration values determined in the earlier studies in that the chemical constituent concentrations measured in the more recent studies were generally equal to or less than those values measured in 1973-74 and upon which the WRP design is based. In addition to results of sampling programs (Rows 1, 2 and 3), Table 1 also presents the average output of the demonstration WRP and the maximum recommended quality of WRP output. During the months of March and April 1982, operational tests of the WRP using effluent from the 91st Ave. Plant and the Tolleson Plant indicated no problem in meeting the required quality specifications for CWS makeup water. Tr. 1296-1297 (Bingham).

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TABLE 1
WASTEWATER QUALITY SUMMARY

	Concentration, mg/l					
DESCRIPTION	CALCIUM	MAGNESIUM	SILICA	PHOSPHATE	AMMONIA (as N)	TOTAL DISSOLVED SOLIDS
91st Ave. Plant Effluent (Approximately 1000 samples in 1973-74) (App. Ex. U, revised, at WGB-5)	52.9	22.9	28.8	22.1	30.9	1039
91st Ave. Plant Effluent (1976-80) (*Id.* at WGB-6)	46	24	28	22	18	793
Tolleson Plant Effluent (March, April 1982), Bingham at Tr. 1237, 1238, 1297, 1298	38-46	13.7-24	11-50	18-21*	1.8-18	1100-1300
Average Output of Demonstration WRP (App. Ex. BB, Part V, Table 4-1, at 5-6)	26.4*	1.5*	8.0	0.3*	5.0	800
Maximum Recommended WRP Output Concentrations (*Id.*)	28*	2.0*	10	0.5*	10.0	—

*Reported values converted to appropriate units for consistency.

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30. The design and specification of materials for the circulating water system for the Palo Verde Units could be impacted by the quality of the wastewater effluent provided for cooling purposes. Additionally, the quantity of effluent required for blowdown to control scale formation, fouling, corrosion and biological growths within tolerable limits would be a function of the concentrations of suspended and dissolved solids present in the effluent. Bingham, ff. Tr. 920 at 2, 3.

31. The circulating water test studies conducted by Applicants had four objectives:

[1] Verify the practicality of operating the plant circulating water systems at 15 cycles using the specified reclaimed wastewater.

[2] Identify potential plant operational problems associated with this level of operation.

[3] Determine the in-cycle treatment requirements for the plant circulating water system, and

[4] Determine relative corrosion rates for candidate condenser tube and tube sheet materials. App. Ex. BB at 5-1; Bingham, ff. Tr. 2585 at 1.

32. Two types of circulating water test programs were conducted. One program employed the CWTF located at the 91st Ave. Plant. The other program employed a Bench-Scale testing apparatus. Bingham, ff. Tr. 2585 at 4.

33. The CWTF contained the essential components of a typical power plant circulating water system, including a heat source, heat exchanger, cooling tower, circulating water pump, piping and controls for operation, makeup and blowdown. *Id.* at 4-5; *see* App. Ex. BB at 5-14. In the CWTF tests, the treated wastewater was concentrated and circulated through the heat exchangers and the cooling tower. A series of tests was run at varying cycles of concentration and with varying scale inhibitors, corrosion inhibitors, and ammonia content. Two different types of heat exchanger materials — admiralty and titanium — were used in the tests. Coupon and galvanic series tests for a number of materials were included to provide corrosion data. Bingham, ff. Tr. 2585 at 5.

34. The Bench-Scale tests confirmed the CWTF field test results in terms of water chemistry, control of sludge formation, tube scaling and corrosion, and did not foreclose operation at cycles of concentration greater than 20. *Id.* at 14.

35. The WRP is designed for variable process flow rates, variable chemical addition rates and variable recycle processing. Accordingly, a broad range (a factor of two) of inlet constituent concentrations can be accommodated while still achieving the quality specifications for the treated wastewater effluent being supplied as makeup to the CWS. Bingham, ff. Tr. 2585 at 18, 19.

36. The design layout of the WRP was changed from a three module design to a more flexible series/parallel design so that operational problems or failures of individual units would not result in complete WRP shutdown. These and other changes in the design and layout of the WRP made as a result of the earlier

reliability study and an independent design review board provided increased flexibility and greatly improved the reliability of operation of the WRP. The current design permits design capacity to be realized with any one of the parallel paths out of service. *Id.* at 19, 20; Tr. 2588 (Bingham); App. Ex. FF.

37. Operating experience with municipal wastewater at generating stations operated by the Southwestern Public Service Company and the City of Burbank, California, indicates that phosphate should not present any operational problems. The projected concentration of phosphate for PVNGS is below the phosphate concentration for both these stations. Bingham, ff. Tr. 2595 at 16, 17; App. Ex. BB, Appendix C, Tables C-8-2 and C-8-3, pages C-8-4 and C-8-7, respectively.

38. The Central Arizona Project was originally conceived in the 1920s to rescue agriculture in Central Arizona that was dependent upon falling groundwater tables. Since that time, a population explosion and growth of cities and industries in Central Arizona have changed the Central Arizona Project to what is primarily a municipal/industrial water supply project. Tr. 742 (Steiner).

39. A witness for the Intervenor presented a comparison of the approximate quality (as measured in terms of the content of dissolved solids) of three potential sources of raw water available to the Cities. The witness stated that surface water contains less than 500 ppm of dissolved solids, CAP water will contain 730 ppm and the value for groundwater is in the range 500 to greater than 1500 ppm. Tr. 1412-1414 (Lorah).

40. The Nalco Chemical Company performed an independent review of the testing methodology and results of the CWTF and Bench-Scale test programs. Nalco concluded that the CWTF and Bench-Scale programs were adequate to represent the circulating water at 15 and 20 cycles of concentration as compared to the specified makeup, and that the CWTF testing was adequate to evaluate corrosion and the use of chlorination to control slime and microbiological fouling organisms and that the CWS could be operated on treated effluent at 15 cycles of concentration without unusually strict control or costly pretreatment. *Id.* at 14, 15; *see* App. Ex. DD.

41. The Nalco Report (App. Ex. DD) referred to the fact that the Belmont Laboratory reported some loss of silica and the pilot plant data showed lower calcium, silica, nitrate and sulfate than would be indicated using the chlorides as the means of measuring concentration. Nalco attributed these discrepancies to analytical error and in no way reflective of the actual stability of the cooling water. App. Ex. DD at unnumbered p. 5.

42. There is considerable experience at thermal power plants operating with surface water for condenser cooling at 15 or more cycles of concentration. Staff Ex. 8 at 1, Tr. 2678 (Bingham).

43. There are nine power stations (15 individual plants) now operating with municipal wastewater as the condenser coolant. These plants are currently (1982) operating at cycles of concentration of 4 to 5. Staff Ex. 8 at 2.

44. There are no power plants using municipal wastewater treatment plant effluent for condenser cooling that concentrate the effluent more than five cycles of concentration. *Id.*

45. Applicants' Exhibit EE and page 1 of Staff's Exhibit 8 list *inter alia* and for comparison purposes the estimated concentrations of the "problem" constituents in the CWS for PVNGS and many other electric generating stations. The concentration values for PVNGS are as actually measured during CWTF testing (App. Ex. BB at Table 4-2).

46. The estimated PVNGS CWS chemistry is, except for phosphate, well within the envelope of the concentrations of problem constituents and total dissolved solids for other operating plants. App. Ex. EE; Staff Ex. 8 at 1.

47. An Intervenor witness identified from the literature a limitation of 500,000 for the product of the concentrations of calcium and sulfate. Tr. 1667-70 (Robinson); *see also* Int. Ex. XXVII, Table WPR-3; Int. Ex. XXXIII, Table 1 at 27. The limitation was established as a result of concern for scaling. Tr. 1669 (Robinson). The source of the witness' limitation value of 500,000 characterizes the limitation as a "rule of thumb" estimate which may not be applicable to unique water problems. Int. Ex. XXVIII at 27. The product of the concentrations of calcium and sulfate for PVNGS is estimated at 2×10^6. App. Ex. BB, Part V, Table 402. This product is below those encountered at several operating plants. App. Ex. EE. (Twelve of the 14 plants listed other than PVNGS showed a higher calcium sulfate product.) No values were entered for two of the plants because no sulfate concentrations were presented. Based upon the calcium values, however, which were 50 percent higher than that projected for PVNGS at 15 cycles, it would appear that those two plants also would show higher product values than PVNGS. App. Ex. EE.

48. The product of the concentrations of calcium and alkalinity for PVNGS is estimated at 32,000 which is below the "rule of thumb" value of 41,600 and considerably below values reported for several other operating plants. *Id.;* Int. Ex. XXVII, WPR Table 3; Bingham, ff. Tr. 2585 at 18.

49. More than 85 years of titanium tube condenser operation have been accumulated. Virtually all of this experience has been gained using salt or brackish water as the condenser coolant. In no instance, has pitting, erosion or corrosion of titanium tubes been observed. Staff Ex. 8 at 4.

50. Approximately 10 years of experience with titanium tubes and aluminum bronze tubesheets have been accumulated at the Arthur Kill Station, a fossil power station located on the Arthur Kill, a polluted seawater site between Staten Island and New Jersey. *Id.* at 3.

51. The CWTF simulated the CWS with respect to tube flow velocity, temperature rise of the circulating water in the condenser, and circulating water chemistry. The CWTF was configured in a manner similar to the tube/tubesheet arrangement found in typical condensers. *Id.* at 7-9.

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52. Ten tests were performed with the CWTF. Each of the first three tests was of one week's duration; each of the last seven tests was of two weeks' duration. In the five initial tests, the impurity concentration was 15 times that of the feed (15 cycles of concentration); in the remainder, 20 cycles of concentration was used. Admiralty tubed heat exchangers were used in the first six tests, and titanium tubed heat exchangers were used in the last four tests. *See Id.* at 10-13; App. Ex. BB at 5-19.

53. Operation of the CWTF during the initial three tests showed no pitting, corrosion or hard scaling of the admiralty tubed heat exchangers; however, a persistent sludging condition was observed. Following the fourth test, it was concluded that occasional low pH conditions and inadequate chlorination control were responsible for the sludge problem. The fifth and sixth tests using improved control of pH and chlorine resulted in minimal fouling and sludging problems. No pitting or corrosion of the titanium tubes was observed during inspections following the seventh through tenth tests. There also was no sludge formation. Bingham, ff. Tr. 2535 at 10-12. The test results indicated that titanium would be the best choice of material for condenser tubes. Tr. 2587 (Bingham).

54. Corrosion testing, performed in conjunction with CWTF operations, indicated that seawater corrosion data are generally applicable and may be used in the selection of materials for construction and materials for protective cooling of plant equipment subjected to the PVNGS circulating water at 15 cycles of concentration. App. Ex. BB at 5-2, 5-22; Bingham, ff. Tr. 2585 at 9.

55. Coupon corrosion tests of candidate tube and tubesheet materials resulted in the following relative ranking of materials (in order of corrosion resistance):

a. titanium
b. stainless steel (SS) 304
c. Monel alloy 400/405
d. nickel aluminum bronze
e. 70-30 cupro-nickel
f. aluminum bronze
g. 90-10 cupro-nickel
h. admirality
i. copper, EC grade
j. Muntz metal
k. steel alloy 1020

Id. at 5-22. Coupon corrosion tests showed titanium to have a zero corrosion rate. *Id.* at 5-4; *see also* section 5.2.3 at 5-18 to 5-23 and Appendix C-4.

56. Applicants propose titanium condenser tubing with aluminum-bronze tubesheets. Bingham Rebuttal Testimony, ff. Tr. 1585 at 9.

57. A statement appearing in the FSAR, App. Ex. W at p. 9.2-94C (Amendment 8) is interpretable as committing coolant makeup as a supply for the spray ponds which are the recipient of the reactor decay heat during periods of shutdown.

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They comprise the "ultimate" sink. The Applicants advised the Staff that the regional aquifer is the sole source of makeup water for the spray ponds. Int. Ex. XXXV at 2.

58. General Design Criterion 44, "Cooling Water," of Appendix A to 10 CFR Part 50, requires, in part, that suitable redundancy in features be provided for the cooling water system to ensure that its safety function can be accomplished. General Design Criterion 2, "Design Bases for Protection Against Natural Phenomena," requires, in part, that structures, systems, and components important to safety be designed to withstand the effects of natural phenomena without loss of capability to perform their safety functions.

59. NRC Regulatory Guide 1.27 (Int. Ex. XII) describes a basis that may be used to implement General Design Criteria 44 and 2 with regard to the ultimate heat sink that is acceptable to the NRC Staff. *Id.*

60. The ultimate heat sink performs two principal safety functions: (1) dissipation of residual heat after reactor shutdown and (2) dissipation of residual heat after an accident. *Id.*

61. Regulatory Guide 1.27 requires an ultimate heat sink capacity sufficient to provide cooling for a period of time necessary to evaluate the situation and take corrective action. A period of 30 days is generally considered to be adequate for these purposes. A capacity of less than 30 days may be acceptable if it can be demonstrated that replenishment can be effected to ensure the continuous capability of the sink to perform its safety functions, taking into account the availability of replenishment equipment and limitations that may be imposed on "freedom of movement" following an accident. *Id.*

62. The ultimate heat sink for each Palo Verde unit consists of two independent and adjacent spray ponds. The ponds are Seismic Category I structures. App. Ex. W at 9.2-63, 65.

63. The combined available water inventory of the two spray ponds is sufficient to provide the necessary cooling following a design basis loss-of-coolant accident for at least 27 days without water makeup under adverse meteorological conditions. *Id.* at 9.2-88, 89; Tr. 2463 (Licitra).

64. After 27 days of ultimate heat sink operation, the cooling water makeup requirement is 225 gpm. Int. Ex. XXXV at 3.

65. In order to meet the Regulatory Guide requirement of continued cooling capability of the spray ponds beyond the 27 day period, Applicant plans to use the 400-square-mile regional aquifer as a backup source. Depth to water in this aquifer is 150 to 250 feet. *Id.* at 2. At present, there are three wells serving the domestic water system, each with a capability of delivering 1400 gpm or more, which could provide the continued capability of the spray ponds. If these wells are rendered inoperable and irreparable by the initiating event, Applicants propose to drill an onsite well or wells capable of delivering 1200 gpm of water. *Id.* at 3.

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66. Based on information obtained from their soils/geologic consultant and from five experienced well drillers in the Phoenix area, Applicants conclude that a new well or combination of wells sufficient to produce and deliver 1200 gpm water to the ultimate heat sink could be completed within 15 days of the initial decision that additional water supplies are necessary. *Id.*

67. Applicants have applied to the Arizona Department of Water Resources for grandfathered groundwater pumping rights at the PVNGS site. Int. Ex. XXXVI, XXXVII.

68. The output from 91st Ave. in 1985 is projected at 105.6 mgd. Previously committed allocations are 33.3 mgd leaving 72.3 mgd available to the Applicants. Whereas the contract (Agreement No. 13904) is for up to 125 mgd, a need for only 58 mgd is foreseen resulting in an overall surplus, from 91st Ave. alone, of 14.3 mgd. Additionally, approximately 50 mgd are potentially available from the Tolleson and the 23rd Ave. Plants. App. Ex. LL at IV-3, Hulse, ff. Tr. 404 at 6.

69. Diversion of raw sewage from the 91st and 23rd Ave. to proposed satellite treatment plants in the Phoenix area (East Mesa and the northeast) will reduce the 1985 excess at 91st Ave. over the combined requirements for PVNGS and other commitments to about 5 mgd. App. Ex. LL IV-2, IV-4.

70. The May 1982 update of the Maricopa Association of Governments program (MAG Update) presents the projected expansions in area wastewater treatment plants. A 30-mgd expansion of the 91st Ave. Plant (to 150 mgd) is scheduled for 1986; a 13-mgd expansion of 23rd Ave. (to 50 mgd) in the 1985-90 period; a new plant at Arrowhead Ranch (2.2 mgd) in 1984-85; and another new one in North Scottsdale (0.5 mgd) in 1990. App. Ex. LL, Table III-4 at III-20.

71. An examination and comparison of the monthly requirement for cooling water with the monthly flows from the Phoenix area wastewater plants, normalized to the month of peak coolant demand (June), shows that the available supply of wastewater effluent is equal to or greater than coolant demand throughout the year. App. Exs. E and X.

72. Effluent from the 91st Ave. Plant will be obtained by the PVNGS pursuant to an April 23, 1973 contract, entitled "Agreement No. 13904, Option and Purchase of Effluent," among the Arizona Public Service Company (APS), the Salt River Project Agricultural Improvement and Power District (SRP) (two of the Applicants), the City of Phoenix, the City of Glendale, the City of Mesa, the City of Scottsdale, the City of Tempe and the Town of Youngtown (hereinafter collectively referred to as "the Cities") (App. Ex. H). Hulse, ff. Tr. 404 at 2.

73. The principal source of water for cooling the steam condensers at the Palo Verde Nuclear Generating Station, Units 1, 2 and 3 is effluent from the sewage treatment plants which process wastewater from Phoenix and nearby municipalities. These plants are the Multi-City 91st Avenue Sewage Treatment Plant, shared in ownership, operation and maintenance by six municipalities and located some 10 miles west of the City of Phoenix; the Tolleson Wastewater Treatment Plant,

owned and operated by the City of Tolleson, located adjacent to the 91st Ave. plant (App. Ex. N); and the 23rd Avenue Sewage Treatment Plant, owned and operated by and located within the City of Phoenix. Staff Ex. 1 at 4-14. The approximate output capacities of these plants in 1982, expressed in million gallons per day (mgd) and in acre-feet per year (afy), are: 90 mgd (100,000 afy) at 91st Ave. (Tr. 846 (Steytler)); 8.3 mgd (9,300 afy) at Tolleson (Tr. 1034 (Muir) App. Ex. J at 2); and 37.2 mgd (42,000 afy) at 23rd Ave. (App. Ex. KK at 2-26).

The effluent is transported from 91st Ave. and Tolleson via underground pipes, for a distance of more than 35 miles, to the nuclear station, where further treatment occurs. The construction of a connection between the 23rd Ave. and 91st Ave. Plants is viable although not yet in place. Tr. 1332 (Bingham). Untreated sewage can flow from the 23rd Ave. Plant to the 91st Ave. Plant. Tr. 2279 (McCain).

74. Agreement 13904 provides an option to the Applicants to purchase annually up to 11,400 mg (35,000 af) as required by each of a maximum of four operating electric generating units (App. Ex. H. at 8; Tr. 463 (Hulse)), subject to prior commitments of the effluent to other users. The Agreement provides for a unilateral distribution of any unused portion of effluent at one unit to any other electric-generating units. App. Ex. H at 11; Tr. 464, 465 (Hulse). For the three units presently nearing completion, therefore, 125 mgd (140,000 afy) are available under the contract. The Agreement precludes construction of additional treatment plants which would impair the prescribed delivery to PVNGS. App. Ex. H. at 16.

75. Effluent from the Tolleson Plant is being made available under an "Agreement for the Sale and Purchase of Wastewater Effluent" (App. Ex. J). The quantity to be made available is also subject to a prior commitment. The amount is not to exceed 8.3 mgd. App. Ex. J. at 2.

76. The supply of effluent to PVNGS under the Agreement will be reduced by a number of factors, including in-place contractual arrangements for delivery of effluent to other parties. Fulfillment of these obligations takes precedence over the demand by the nuclear station. App. Ex. H at A-1.

77. The effluent from the 91st Ave. Plant is committed to the Buckeye Irrigation Company in the amount of 26.8 mgd (30,000 afy) (Tr. 806 (Schaper)), the Arizona Game and Fish Department in the amount of 6.5 mgd (7,280 afy), and to the U.S. Water Conservation Laboratory in the amount of 1 mgd (1,120 afy). The necessity of fulfilling this commitment is problematic because this Laboratory, located at Flushing Meadows, was destroyed by a flood in 1978. Staff Ex. 1 at 5-3.

78. Under a separate agreement, the Roosevelt Irrigation District holds an option to purchase 17.9 mgd (20,000 afy) of effluent from the 23rd Ave. Plant. The option has not been exercised because the quality of the effluent is not sufficiently high for its intended agricultural use. Tr. 2353 (McCain).

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79. A quantity of the effluent that will be available from the 23rd Ave. Plant in 1985 has a potential for salvage and reuse, such as for irrigation, in SRP programs, after percolation into soil and pumped recovery. Although no firm numeric was assigned to this potential supply, it is implied to be of the order of 1,000 million gallons per year. App. Ex. O; Tr. 670 (Juetten)

80. The Tolleson Plant is committed to supply up to 2.0 mgd (2,240 afy) of effluent for the production of sod on an area adjacent to the plant. Additionally, the City of Tolleson reserves claim to ten percent of all effluent in excess of the above 2.0 mgd. Further, sales for steam-condenser cooling from the Tolleson Plant will be restricted to 8.3 mgd (9,300 afy). App. Ex. J at 2.

81. In issue in these proceedings are the provisions in the contracts among the Applicants and the various municipalities supplying effluent whereby under certain conditions delivery of effluent to the generating station may be denied. Essentially identical statements of these conditions appear as Section 21 of Agreement 13904 and as Section 10 of the Tolleson contract. App. Ex. H at 34; App. Ex. J at 20.

82. The contracts grant the suppliers the right to interrupt delivery of effluent when the following conditions are fulfilled:

a. there exists in the municipalities a critical need for water for domestic purposes;

b. all other reasonable sources of water to the municipalities have been exhausted;

c. reasonable steps have been taken to conserve the water supply to the municipalities; and

d. reasonable notice of the critical need has been given to the Applicants. Tr. 469 (Hulse); App. Ex. H at 34.

Section 21 of Agreement 13904 has never been invoked to divert the supply of effluent. Tr. 2237 (McCain).

83. Agreement 13904 provides an option for the purchase of effluent by the Applicants from both the 91st Ave. and the 23rd Ave. plants. Effluent from the 23rd Ave. plant is contractually available to meet the commitment to the Applicants or to be recognized as a source under condition *b* of Section 21. App. Ex. H at 5-6. Such a course will require a connection between the 23rd Ave. and the 91st Ave. plants.

84. Direct use of effluent from wastewater treatment plants by municipalities potentially jeopardizes the anticipated supply to the coolant system of the nuclear generating station. Possible uses include irrigation (Tr. 2181 (McCain)), exchange with agricultural water supplies (App. Ex. Q at 71; Tr. 2184 (McCain)), and as a part of the domestic supply itself (Tr. 2182 (McCain)).

85. Effluent may in the future be used to irrigate such areas as parks and golf courses. To be effective, however, the source of the effluent should be proximate to the area of use. This may be achieved by the use of a number of relatively small

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(capacity about 3 mgd) satellite treatment plants appropriately located. The effect of the substitution on the effluent supply to Palo Verde would not be major. Tr. 2181, 2427, 2428 (McCain).

86. Direct use of effluent as a part of the domestic supply entails a high level of purification by a process whereby effluent is recharged to the groundwater table, refiltered, then retrieved. This process is presently not economically feasible. Tr. 2182 (McCain). In addition to economic considerations, there is a lack of social acceptance for the utilization of effluent for drinking water. Some reluctance has been displayed by Indians towards use of effluent even for agriculture. App. Ex. Q at 71, 72. No above-ground capability for the necessarily high purification process used to achieve potability economically is known to exist. Tr. 1930, 1931 (Lemmon). Nevertheless, a population may be driven to consumption of effluent during times of severe water shortages. Tr. 2008, 2009 (Lemmon).

87. The Maricopa Association of Governments (MAG) is a governmental body charged with planning the wastewater treatment facilities in the Phoenix metropolitan area. In behalf of MAG, the U.S. Environmental Protection Agency in July, 1979, prepared a Final Environmental Impact Statement and the U.S. Corps of Engineers prepared a MAG 208 Water Quality Management Program. In May 1982, a MAG 208 Point Source Plan Update was issued. (App. Ex. KK, p. iii; Tr. 876 (Steytler)). The Arizona Municipal Water Users Association supports MAG and its members are associated with the MAG studies. Tr. 2302, 2304. (McCain).

88. Additionally, up to 8.3 mgd (0.009 mafy) of effluent will be available from the City of Tolleson. The contents of a reservoir on the Palo Verde site with a capacity of 750 mg (0.002 maf) will provide a cushion against short-term fluctuations. Gonzales, ff. Tr. 2522 at 10. The Tolleson output in 1986 is estimated at 7.9 mgd. Tr. 1035 (Muir).

89. The combined effluent from the 91st Ave. and the Tolleson Plants is shown to be adequate to fulfill the need for coolant makeup at the PVNGS when all completed units are operating at a capacity factor as great as 87.5% during 1985, 1986 and 1987. App. Ex. A; Tr. 409 (Hulse).

90. The most recently developed predictions of effluent available to the PVNGS appearing in this record are a part of the 1982 update of the MAG water quality management program. The quantities, in mgd, available from the 91st and 23rd Ave. Plants over four decades are:

	Year						
	1980	**1985**	**1990**	**1995**	**2000**	**2010**	**2020**
91st Ave.	87.9	105.6	119.1	133.8	152.2	186.2	215.7
23rd Ave.	42.6	42.4	42.5	42.5	43.6	46.5	48.3

App. Ex. LL at IV-3.

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91. Applicants further supported their position on the adequacy of the wastewater effluent supply as coolant makeup at PVNGS by a comparison of actual with predicted values of the output of the 91st Ave. Plant. A prediction dated January 1980 set the June 1981 average flow at 91.1 mg. (App. Ex. C at C-2). The corresponding flow observed was 98.4 mg (App. Ex. E at 2). A witness for the Applicants applied the latter observation to the instant case through reduction by the prior commitments (33.3 mgd) and augmentation by the expected inflow from Tolleson (7.5 mgd). The result (69.0 mgd) is essentially equal to the anticipated PVNGS need (approximately 70 mgd) in June when three units are operating. Tr. 438-441. (Hulse).

92. The preferred waste handling alternative in the July 1979 MAG Study was to link up many small cities with the 91st Avenue Treatment Plant. Tr. 879 (Steytler).

93. The MAG 208 study has been updated by a May 1982 Point Source Plan. According to the May 1982 Update, the 91st Avenue Plant will continue to be the main regional wastewater treatment facility. App. Ex. LL at III-1; Tr. 2301 (McCain).

94. There are three Indian Reservations in the State of Arizona that can be expected to use effluent as an exchange basis for potable water. Two of these reservations are in the Phoenix area and one is in the Tuscon area. Tr. 2425 (McCain). Any effluent going to the Tuscon reservation would come from the Tuscon area and not from Phoenix. *Id.* at 2425, 2426.

95. The disposition of water from the Central Arizona Project is addressed in the Final Environmental Impact Statement (FEIS) of the Project, prepared by the U.S. Department of the Interior. App. Ex. Q. Included therein is the concept of water exchange with the Indian tribes whereby, for instance, raw CAP water assigned to Indians and intended for irrigation may be traded to municipalities for treated effluent from sewage treatment plants. The effluent is generally suitable for irrigation of some crops. The exchange ratio is often such that more effluent would be supplied to the Indians than CAP water would be diverted to the municipalities. App. Ex. Q at 71; Tr. 1405 (Lorah); Tr. 757 (Steiner); Tr. 2184 (McCain).

96. In such an exchange, municipalities enhance their supply of potentially potable water, and Indian Tribes augment their water sources with an increment of lower quality but which is nonetheless satisfactory for irrigation. Effecting these exchanges will divert effluent from other uses. *Id.*

97. An Intervenor's witness (Staff Director, Arizona Municipal Water Users Association) testified on the likelihood of the construction of regional treatment plants, additional to those projected in the 1982 MAG Update, which might divert sewage from 91st Ave. Reference was made specifically to small plants located near areas where effluent can be exchanged for raw water. No designs for such plants have been prepared and, thus far, the matter is only "a topic of conversation." Tr. 2192 (McCain).

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98. The May 1982 MAG Update considers the availability of effluent from the area wastewater treatment plants with recognition of the probability that one or more small satellite plants may be put into operation thereby reducing the flow into 91st Ave. Those data predict, for 1985, an excess availability at 91st Ave. of nearly 5 mgd when the three PVNGS units are operating and with prior commitments met. App. Ex. LL Table IV-2 at IV-4.

99. The argument is made by the Intervenor that additional water treatment plants may be built in the future in the Phoenix area that could divert some of the effluent going to the 91st and 23rd Avenue Plants, thus potentially jeopardizing Palo Verde's cooling water supply.

100. The 1982 MAG Update permits the construction and operation of treatment plants of small capacity (about 2 mgd) serving regional areas. App. Ex. LL at III-23; Tr. 2416-17 (McCain). Accordingly, there will be little or no diversion of flow from 91st Ave., Tr. 2427-30 (McCain), particularly since the Cities must continue to purchase capacity from 9lst Ave., Tr. 885-887 (Steytler), and the 91st Ave. supply will continue to be sufficient for PVNGS. App. Ex. LL at IV-2, Tables IV-1, IV-2; Tr. 2310 (McCain).

101. Further assurance that satellite and subregional treatment plants will not divert effluent from Palo Verde is contained in a contractual provision in Agreement 13904 specifically providing that Cities are not allowed to install new plants that will impair their ability to deliver Palo Verde effluent, App. Ex. H at 17. Agreement 13904 is a contract which is presently in full force and effect. Tr. 468 (Hulse).

102. The proposed CAP exchange of 100,000 afy of effluent does not jeopardize the Palo Verde effluent requirements. This proposal, as set forth in the CAP Environmental Impact Statement, provides that such effluent exchanges are only required ". . . where feasible and *consistent with contractual provisions*." App. Ex. Q at 11-15. In addition, 100,000 afy exchange with the Indians proposed by CAP is to be made with effluent that is available after Palo Verde effluent requirements are met. Tr. 758 (Steiner).

103. The most likely exchanges with Indian tribes will take place as part of the CAP program. Tr. 2183 (McCain). There is a strong incentive for the Cities to make exchanges with the Indians through the CAP mechanism since if they try to by-pass the CAP exchange pool and directly exchange effluent for first priority CAP water, the Cities will have their CAP allocations reduced by the amount of the exchange. *Id.* at Tr. 2190.

104. Under the preferred Department of Interior CAP option, 100,000 afy of municipal effluent will be exchanged for Indian CAP water by the year 2034. (*Id.* Tr. 2182; App. Ex. Q at 15). The mechanism for this exchange is that after the year 2005 the Cities will be able to trade their effluent for an equal amount of CAP water. Exchanges before the year 2005 will result in a net loss of municipal supplies since the Cities would have to contribute 75,000 afy to 100,000 afy to the

exchange pool and would only receive approximately 30,000 afy of CAP water in return. Tr. 2185 (McCain). The CAP Environmental Impact Statement predicts as the worst possible case, that effluent exchanges may be necessary in the year 1992. Although an Intervenor witness believes the probability of exchange by 1992 will be low, he considers it likely within the period 2005 to 2010. *Id.* at 2189-2190.

105. Effluent exchanges with the Indians will not be practical in the foreseeable future because neither the 91st nor the 23rd Avenue Plants are located near Indian reservations and it may be too costly to pipe the effluent that great a distance. In order to economically effectuate effluent exchanges with the Indians, regional treatment plants may have to be constructed. *Id.* at 2191-2192.

106. The Cities presently do not intend for future effluent exchanges to adversely impact the supply of effluent to the 91st and 23rd Avenue Plants since both of these plants are scheduled to be expanded in the future. App. Ex. LL, pp. III-9, III-13; Tr. 2301, 2308 (McCain); Tr. 542-544 (Hulse).

107. The Intervenor also argues that the Palo Verde effluent supply may be adversely affected by possible future renegotiation of Agreement No. 13904. Int. Ex. XX at 4.

108. The contract for Palo Verde effluent under Agreement No. 13904 is presently in full force and effect. Approximately 1.2 million dollars have already been remitted in option payments, and delivery of effluent was begun on March 29, 1982. Tr. 468 (Hulse). There is no provision in this Agreement which permits termination earlier than its specified term. Tr. 482 (Hulse).

109. The Salt River Project, the operating arm of the Salt River Valley Water Users Association, is, according to Arizona statutes, a municipal corporation which delivers surface and groundwater to members' lands located in municipalities in the Phoenix area. In aggregate, members' lands comprise approximately 238,000 acres of which about 40% is used for commercial agriculture. Tr. 2394 (McCain); Tr. 634 (Juetten).

110. The drainage from the watersheds of the Verde River, the Salt River and Tonto Creek, a collective area of about 13,000 square miles, provides the surface water supply to the SRP. Six impoundments on these streams (four on the Salt and two on the Verde Rivers) provide a capacity of about two million acre feet. Approximately 60% of the water delivered by SRP is surface water; the remainder is ground or developed water. Tr. 637 (Juetten).

111. The Salt River Valley Water Users Association was established in 1903 to contract with the federal government for the repayment of the cost of facilities which were constructed by the government. The Association represents the beneficiaries of water collected and distributed by the Salt River Project. Tr. 623, 624 (Juetten).

112. The Horseshoe Dam on the Verde River, as originally constructed, had a capacity of nearly 0.060 maf. Subsequently, the City of Phoenix invested its funds in the installation of gates above the spillway, thereby effectively increasing the

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height of the dam and, accordingly, increasing the impoundment limit to more than 0.130 maf. The ownership of this increment or any fraction thereof, after correction for evaporative and silting losses, rests with the City and carries with it the right of disposition in any manner elected by the City. A drawdown of the level from behind the gates may, for example, be distributed by SRP in which case, through a system of measurements and accounting, Phoenix obtains an incremented "gate-water" credit. Tr. 687 to 689 (Juetten). As of late January 1982, the City's credit balance was less than 0.016 maf; on April 1st, it had increased to nearly 0.089 maf. *Id.* at 663, 664.

113. The quality of the surface water supply to the Phoenix area may be impaired by leachants from landfills arising from Salt River intrusions during periods of flooding such as those which occurred during 1978, 1979 and 1980. Tr. 1969, 1970 (Lemmon).

114. It is estimated that, over a 20-year period, 0.7 to 0.8 maf of groundwater will be contaminated in this manner to an extent which would render it unusable as drinking water without additional treatment. Int. Ex. XXXIII at 7.

115. The SRP obtains groundwater from 249 pumped wells. Tr. 637 (Juetten).

116. The Intervenor has contended that Cities will not be able to drill new wells for groundwater as a result of the recently enacted Groundwater Management Act. According to Intervenor's witness, William Lorah, this new Act may prevent a City from receiving permission to drill a well in an area that it is not presently serving. Tr. 1399 (Lorah).

117. In 1980, the State of Arizona enacted into law the Groundwater Management Act which establishes goals to control water development in areas that have experienced extensive water-level decline in the past. The goal established for the Phoenix area is to bring into balance groundwater withdrawals and natural recharge by the year 2005. App. Ex. Q, I-6; McCain-Tr. 2169:

118. An Applicants' witness testified that, although permits to drill wells must be obtained from the Arizona Department of Water Resources, the Department has no authority to deny a permit to a city or private water company to drill a well as long as the drilling takes place within their service areas. Furthermore, Cities are allowed to expand their service areas over time. They can also expand by purchasing water companies and taking over their operating systems. Tr. 787-788 (Steiner).

119. An Intervenor's witness' testimony also failed to establish any reasonable likelihood that the Groundwater Management Act will cause water shortages. Although he believes there is some uncertainty about future well drilling, he also admitted there are no requests for service area well permits which have been denied, although a number are under advisement. Tr. 2212 (McCain). Mr. McCain further testified that the Groundwater Code does not limit the amount of water that can be taken from existing wells and that the Cities still have the right to

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withdraw from any particular service area well that amount of groundwater necessary to supply its customers. Tr. 2371 (McCain).

120. The quality of well water in the urban areas has deteriorated in recent years. This has led to the removal of some wells from service. Investigations reported in 1981 disclosed twelve wells located in the Phoenix area and within the Salt River Project to be contaminated with trichlorethylene in amounts of up to nearly 1,000 parts per billion (ppb). The limit of trichlorethylene in potable water estalished in Arizona is 5 ppb. Int. Ex. XXX at 5, 6; Tr. 1828 to 1842, 1849, 1850 (Swanson).

121. Dibromochloropropane, a constituent of pesticides, has been found by the Department in 26 wells in Maricopa County at concentrations in excess of 0.01 ppb, the limit established to preclude an excess cancer risk. Owners of some wells were advised to seek other sources of potable water. Two wells were removed from service. Int. Ex. XXX at 7, 8.

122. A source of an unspecified quantity of water in the area consists of water from other wells, some city-owned and some privately owned. Tr. 654 (Juetten).

A witness for the Intervenor also identified the two problem contaminants, trichlorethylene and dibromochloropropane, which have been found in some wells in the Phoenix area. Int. Ex. XXX at 3-9. Although he predicted that groundwater contamination may become a greater problem in the future (*Id.* at 12), no persuasive evidence was presented that TCE or DBCP can cause water shortages in the Phoenix area. Of the 202 City-owned wells in the Phoenix area, Tr. 2350 (McCain) only eight have been found to contain TCE above State action levels. Int. Ex. XXX at 5. Wells which are contaminated by TCE can be used for various other purposes besides human consumption. Int. Ex. XXX, Appendix A at 42. The use of TCE has been greatly diminished because of the advent of air pollution control regulations. Tr. 1868 (Swanson).

123. Some wells containing DBCP have been located near citrus orchards in the Phoenix area. Of these wells, the State of Arizona Department of Health Services only recommended that three municipal wells be disconnected from the system. Int. Ex. XXX at 8. DBCP contaminated water can be used for agricultural purposes. Tr. 1854 (Swanson). DBCP has been banned by EPA in pesticide suspension hearing during the past two years. *Id.* at 1867, Int. Ex. XXX, Appendix C at 2.

124. Problems concerning contaminated wells can be alleviated if the Cities take positive steps. Water contaminated by TCE and DBCP can be treated to make it suitable for human consumption by several techniques to include granular activated carbon and aeration. Tr. 1853, 1870-1871 (Swanson). Such treatment may be expensive, but it has been utilized in other parts of the country. Int. Ex. XXX, Appendix A at 18. Moreover, if a well is contaminated, a City also can usually take corrective measures by drilling another nearby well into the aquifer to replace the well that was lost. This work is a matter of technique which can be

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performed by knowledgeable individuals. Tr. 1857-1860, 1834 (Swanson). Additionally, if a portion of an aquifer becomes contaminated steps can be taken to identify the magnitude of the plume so that future deterioration is minimized. (*Id.* at 1872, 1879.

125. The Central Arizona Project (CAP) is a Congressionally authorized endeavor designed to distribute water from the Colorado River to which the state of Arizona is entitled. The project is comprised essentially of three sections of aqueduct, with associated pumping capability, extending from the river at Lake Havasu to a reservoir between Phoenix and Tucson. The section west of Phoenix is nearing completion and is expected to be in service by 1985. Use of the entire project is scheduled for 1989 or 1990. Tr. 740 to 745 (Steiner).

126. By order of the Supreme Court in the case of *Arizona* v. *California*, 373 U.S. 546 (1963), Arizona is entitled to 2.8 mafy of Colorado River water plus 46% of any flow above 7.5 mafy. Arizona is currently using or has a commitment to use 1.2 mafy in areas along the river. The incremental 1.6 mafy is proposed for the Phoenix-Tucson area. Tr. 741, 742 (Steiner).

127. The use of CAP water is to be allocated to municipal industries, to pure industry (essentially mines and electric generation), to agriculture and, in small quantity, to recreation. Tr. 746 (Steiner).

128. No CAP water has been allocated for personal and industrial use within the Salt River Project, allegedly because no need has been foreseen. Tr. 2359 (McCain). The transition from agricultural use of much property of SRP members to urban use has decreased the water requirements. Tr. 677 (Juetten).

129. In order to minimize transportation and to introduce some efficiency into the exchange process, the source of effluent must be located closer to the area of use (the Indian reservations) than are the 91st and 23rd Ave. Plants. Tr. 2191 (McCain).

130. It is anticipated that significant exchanges of CAP water for treated effluent will not be necessary until some time in the next century. Tr. 758 (Steiner); App. Ex. Q at 71. One witness opined that exchanges may be necessary earlier than the 1990s. Tr. 1405 (Lorah).

131. The supply of water to the CAP depends upon the flow in the Colorado River and the established demands of other users. The basic supply from the Colorado River is about 14.9 mafy. The Colorado River Compact allots 7.5 and 8.5 mafy to the Upper and Lower Basins, respectively, and 1.5 mafy to Mexico under a 1944 treaty. Tr. 782 (Steiner). The beneficial consumptive use of Colorado River water is divided between the Upper and Lower Basins. The Basins are separated at or near Lee's Ferry, Arizona, somewhat downstream from Glen Canyon Dam. Tr. 798 (Steiner). The Upper Basin States include portions of Colorado, Wyoming, Utah and New Mexico. Tr. 1404 (Lorah). More water has been allocated than exists. The Compact, however, states that the flow to the Lower Basin shall not be less than 75 maf during any consecutive 10-year period.

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Further, the Upper Basin currently consumes approximately 5.8 maf annually, with an expected maximum of 7.5 maf. Tr. 782, 783 (Steiner).

132. From the allocation to the Lower Basin, there is a 90% probability that a supply of 1.6 maf will be available to CAP in 1985 (decreasing to perhaps 1.3 maf in the year 2034) under average conditions on the Colorado River. A statistical study says that an absolute annual minimum of 0.63 maf will be available to CAP, based on historic conditions of worst runoff from the Colorado watershed. The study set 0.80 maf as the amount likely to be available during each of two out of three years. Tr. 751, 752, 796 (Steiner). Current storage in the Colorado River makes probable the 1.6-mafy supply to CAP in the mid-1980s even though the region were to experience five or so drought years. Tr. 780 (Steiner).

133. In partitioning the CAP water, a conservative 1.3 mafy was assumed as the supply. The increment above the likely annual amount, 0.5 mafy, was assigned to non-Indian agriculture. Of the remainder, 0.16 mafy was allotted to the Indians and 0.64 mafy to non-Indian municipal and industrial (M&I) use. Tr. 752 to 755 (Steiner).

134. The CAP allocation to the Cities is O.17 mafy, of which 0.12 mafy will go to Phoenix. App. Ex. Q at 34, 35.

135. Additionally, the Department recommended to the Secretary of the Interior, who oversees the distribution of CAP water, that 0.06 maf be allotted in the year 2005 to the Arizona Public Service/Salt River Project for use in electric power generation. App. Ex. Q at 35. This quantity is in addition to the 140,000 afy of effluent placed under option by Agreement 13904, Section 4. Tr. 756 (Steiner).

136. The Department's proposal also includes the allotment of 0.31 maf annually to 12 Indian tribes, 0.64 mafy to 85 M&I entities (including 0.06 mafy for power generation), and the remainder to 23 irrigation districts and farming operations. During shortages, CAP deliveries to all miscellaneous and non-Indian agricultural users will be the first affected. App. Ex. Q at 3.

137. Additional annual commitments of Colorado River water within Arizona consist of about 1.2 maf diverted to Indian reservations and to reclamation projects along the lower river. Together with the expected 1.3 to 1.6 maf allocation to CAP, the amount of river water available to Arizona will be about 2.8 mafy. *See* Finding 126. The current diversion into California is 5.1 mafy. The U.S. Supreme Court's decision in *Arizona* v. *California* limits future diversion to 4.4 mafy. Accordingly, when the CAP is under way, the California withdrawal from the Colorado River will be reduced by about 0.7 mafy. To this extent, the CAP does not create an inordinate additional demand on the Colorado River. Tr. 780 to 782, 797, 798 (Steiner).

138. As an adjunct to the Supreme Court's decision in *Arizona* v. *California*, a Special Master reviewed a claim by several Indian tribes for water in excess of the amount granted. One witness has testified that the Special Master's decision awarded 0.19 mafy to the tribes. Tr. 1403, 1404 (Lorah). A different witness set

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the quantity at 0.12 mafy at a priority higher than that of CAP. Tr. 2209 (McCain). The Special Master's Decision has not yet been accepted by the Court. Tr. 2390 (McCain).

139. It has been speculated that, contrary to the current situation, the Upper Basin will require its full annual allotment of 7.5 mafy, on the basis of anticipated rapid development within the states served. Less water for Arizona might result. Tr. 1404 (Lorah).

140. The future distribution of CAP water remains uncertain, because at this time only the portion of the master contract having to do with Indian rights has been signed by the Secretary of the Interior. Tr. 1405 (Lorah).

141. The water supplies for the cities appear adequate over the next 15 years if the CAP water is delivered, if there are water shortages on the Salt and the Verde Rivers, if cities may tap into available groundwater resources near their service areas, if there are no major complications with Indian water rights and if water may be purchased and transported from elsewhere. Tr. 2201, 2202 (McCain).

142. The amount of water available in the Phoenix metropolitan area from the SRP, from the CAP and from groundwater is adequate to meet the municipal and industrial needs over the next 50 years if a meaningful conservation program, now required by law, is in place, if the CAP has been completed into this area, if water may be added to the CAP from the groundwater basins it crosses, and if high priority agricultural water can be purchased in the event of severe shortages in the Colorado River. Tr. 758, 759, 795 (Steiner).

143. The reuse of wastewater treatment plant effluent for electrical power generation is a relatively high economic disposition of that effluent and is superior to most potential uses. Tr. 759 (Steiner).

144. The Water Supply Plan of the City of Phoenix (App. Ex. O), in describing the effects of conservation and of the well drilling program, predicts that a positive gate-water balance will be retained at least through 1985, when CAP water is expected to arrive. Tr. 673. (Juetten).

145. An accounting of the 1981 water use and availability within the SRP, shows that the supply exceeded the use by about 30%. App. Ex. P.

146. During the prehearing stages of this proceeding, the only generic safety issue that was placed in controversy was that introduced by Intervenor's Contention 6B, namely, anticipated transients without scram. Contention 6B was dismissed through summary disposition by this Board's order of March 17, 1982.

The Staff has included a discussion of generic safety issues applicable to this proceeding in Appendix C of the Palo Verde SER. (Staff Ex. C-2), NUREG-0857, November 1981. Therein, the Staff reviewed each of the relevant unresolved safety issues identified and the associated Task Action Plans that address its resolution. For each of the issues, the Staff concluded that there is reasonable assurance that the PVNGS can be operated prior to the ultimate resolution without endangering the health and safety of the public.

VII. CONCLUSIONS OF LAW

Based upon the foregoing Findings which are supported by reliable, probative, and substantial evidence as required by the Administrative Procedure Act and the Commission's Rules of Practice, and upon consideration of the entire evidentiary record in this proceeding, the Board makes the following Conclusions of Law:

1. The appropriate legal standard for this proceeding is whether there is a "reasonable assurance" that the Palo Verde Units 1, 2 and 3 will have sufficient effluent for cooling purposes. The standard is not one which would require an assured source of effluent at all times.

2. With respect to Contention No. 5, we find that none of the allegations it contains is supported by the evidence of record.

3. On the basis of the evidence of record, the Board finds that there is reasonable assurance that there will be a sufficient supply of effluent from the 91st Avenue and the Tolleson Plants to meet the operational requirements of the Palo Verde units, that there is reasonable assurance that the sources of water available to the Cities during the first five years of operation of all Palo Verde units and beyond are sufficient so that the occurrence of an event which could trigger Section 21 of Agreement No. 13904 is very remote, that the estimated requirements of effluent for condenser cooling are not understated and that effluent is not required for the safe shutdown of the Palo Verde units.

4. Because the Intervenor failed to bring forward as contentions cost-benefit balancing issues in a timely manner, and having failed to satisfy the late-filed contention arguments of 10 CFR §2.714, the Intervenor is not allowed to interject such issues in this proceeding.

5. Where environmental effects are remote and speculative, as they are in this case, there is no legal basis for denying an operating license for the Palo Verde project until all uncertainties are removed.

6. An environmental comparison is not necessary in this case since cost-benefit balancing is only required if a proposed nuclear plant has environmental disadvantages in comparison to possible alternatives. Because this is an operating license proceeding, cost-benefit balancing regarding alternative energy sources is no longer required under the Commission Rules amending Part 51. 47 *Fed. Reg.* 12940 (March 26, 1982).

7. The applicable requirements of 10 CFR Parts 50 and 51 have been met as well as Section 102(2) of the National Environmental Policy Act.

8. This Board having considered and decided all matters in controversy among the parties related to operation, the Director of Nuclear Reactor Regulation is authorized to make such additional findings on uncontested issues as may be necessary to determine whether or not to issue a full-term operating license for the Palo Verde Nuclear Unit 1, and if so upon what conditions.

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9. In view of the Board's Memorandum and Order entered on this date granting the October 14, 1982 petition to intervene of West Valley Agricultural Protection Council, Inc., and the reopening of the record ordered therein for Units 2 and 3, the Board at this time can only authorize the Director to issue an operating license for Unit 1.

10. All of the findings of fact and conclusions of law set forth in this decision apply with full force and effect to all three Palo Verde Units and will be incorporated into a subsequent decision respecting Units 2 and 3 after the closing of the reopened record concerning Units 2 and 3.

APPENDIX A

WITNESSES WHO TESTIFIED IN THIS PROCEEDING

FOR THE APPLICANTS:

William G. Bingham
Project Engineering Manager
Bechtel Power Corporation

Russell Hulse
Vice President, Resources Planning
Arizona Public Service Co.

Richard L. Juetten
Manager of Water Resources and Services
Salt River Project Agricultural Improvement and Power District

Jack Muir
Director of Wastewater Utilities
City of Tolleson

John Schaper
Buckeye Water Conservation and Drainage District
Buckeye Irrigation Co.

Wesley E. Steiner
Director, Department of Water Resources
State of Arizona

Robert B. Steytler
Assistant Director, Water and Sewer Department
City of Phoenix

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FOR U.S. NUCLEAR REGULATORY COMMISSION STAFF:

Raymond Gonzales
Hydrologic and Geotechnical Engineering Branch
Division of Engineering
Office of Nuclear Reactor Regulation

Emanual Licitra
Project Manager for Palo Verde Nuclear Power Station
Division of Licensing
Office of Nuclear Reactor Regulation

FOR THE INTERVENOR:

James J. Lemmon
Hydrologist, Bureau of Waste Control
Arizona Department of Health Services

William L. Lorah
Vice President, Wright Water Engineers
A Consulting Firm

John R. McCain
Staff Director
Arizona Municipal Water Users Association

William P. Robinson
Executive Director and Environmental Analyst
Southwest Research and Information Center

Edwin K. Swanson
Manager, Ambient Water Quality Unit
Bureau of Water Quality Control

Edwin E. Van Brunt, Jr.
Vice President, Nuclear Projects Management
Arizona Public Service Company

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Cite as 16 NRC 2024 (1982) **LBP-82-117B**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Robert M. Lazo, Chairman
Dr. Richard F. Cole
Dr. A. Dixon Callihan

In the Matter of **Docket Nos. STN-50-528-OL**
STN-50-529-OL
STN-50-530-OL

ARIZONA PUBLIC SERVICE
COMPANY, *et al.*
(Palo Verde Nuclear Generating Station,
Units 1, 2 and 3) **December 30, 1982**

The Licensing Board grants the petition of West Valley Agricultural Protection Council, Inc. (West Valley) to intervene in this licensing proceeding, and reopens the record for Units 2 and 3 for the limited purpose of considering West Valley's Contention III regarding salt deposition.

RULES OF PRACTICE: NONTIMELY INTERVENTION PETITIONS

An untimely petition to intervene in a proceeding may be granted if it is found that a balancing of the factors set forth in 10 CFR 2.714(a)(1) favors intervention.

RULES OF PRACTICE: PETITION TO REOPEN THE RECORD

The test for meeting the burden of reopening the record is that stated in *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-598, 11 NRC 876, 879 (1980):

1. Is the motion timely?
2. Does it address significant safety (or environmental) issues?
3. Might a different result have been reached had the newly proferred material been considered initially?

MEMORANDUM AND ORDER
(Ruling on the Petition to Intervene of West Valley Agricultural Protection Council, Inc.)

INTRODUCTION

On July 11, 1980, the U. S. Nuclear Regulatory Commission published in the *Federal Register* a notice of opportunity for a hearing on the application for operating licenses for Palo Verde Nuclear Generating Station, Units 1, 2 and 3, 45 *Fed. Reg.* 46941, revised 45 *Fed. Reg.* 49732 (July 25, 1980). The notice permitted the filing of petitions for leave to intervene in the proceeding, and established August 11, 1980 as the deadline for filing such petitions. One petition for intervention was granted. Hearings were held during the weeks of April 26, May 25 and June 21, 1982 and the record was closed on June 25, 1982. Tr. 2710.

On October 14, 1982, West Valley Agricultural Protection Council, Inc. (West Valley) filed an untimely petition to intervene in this proceeding entitled "Petition to Intervene and Request for Preparation of Supplemental or Revised Environmental Impact Statement, Hearing and Other Relief." Applicants and Staff filed responses opposing intervention.[1] The petition alleged that West Valley had recently discovered substantial new information that salt drift from the Palo Verde cooling towers, spray ponds and evaporation ponds will cause damage to the surrounding cropland. Memorandum of Law in Support of the Petition of West Valley Agricultural Protection Council, Inc. to Intervene in Licensing Proceedings at 1.

The questions before us are:

1) Whether West Valley has satisfied the standards for late intervention set forth in 10 CFR §2.714(a)(1).
2) Whether West Valley has met the burden of establishing that the record should be reopened.

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[1] Joint Applicants' Response to Petition to Intervene of West Valley Agricultural Protection Council, Inc., November 9, 1982; Response of the NRC Staff to West Valley's Petition for Intervention and Request to Reopen the Record, November 15, 1982.

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DISCUSSION

1. Standards for Late Intervention

An untimely petition to intervene in a proceeding may be granted if it is found that a balancing of the following five factors set forth in 10 CFR 2.714(a)(1) favors intervention:

(i) Good cause, if any, for failure to file on time.
(ii) The availability of other means whereby the petitioner's interest will be protected.
(iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
(iv) The extent to which the petitioner's interest will be represented by existing parties.
(v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

A consideration of each of the five factors follows:

(i) Good Cause

The Staff asserts that good cause for a petitioner's untimely filing is the most important consideration in deciding whether to grant late intervention. Staff's Response at 11. A showing of good cause is only one of five factors to be balanced under 10 CFR 2.714(a)(1). *See Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority* (West Valley Reprocessing Plant), CLI-75-4, 1 NRC 273, 275 (1975). Failure to show good cause for late intervention is, in itself, not fatal to a petitioner's claim. When good cause is not shown, however, a demonstration that the other factors favor granting the petition must be particularly strong. *Cincinnati Gas and Electric Company, et al.* (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 575 (1980); *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-431, 6 NRC 460, 462 (1977); *Metropolitan Edison Company, et al.* (Three Mile Island Nuclear Station, Unit 2), ALAB-384, 5 NRC 612, 615 (1977); *Project Management Corporation* (Clinch River Breeder Reactor Plant), ALAB-354, 4 NRC 383, 384 (1976); *Virginia Electric and Power Company* (North Anna Station, Units 1 and 2), ALAB-289, 2 NRC 395, 398 (1975).

West Valley puts forth three factors which it claims constitute good cause for the untimeliness of its petition: (1) It has recently acquired substantial new information on the effects which salt deposition from Palo Verde may have on local agriculture; (2) It relied on misleading information from the Staff; (3) The Staff failed to disclose material facts which, if known, may have prompted earlier intervention. Memorandum of Law in Support of the Petition of West Valley

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Agricultural Protection Council, Inc. to Intervene in Licensing Proceedings, October 14, 1982 at 7-9. These factors do not amount to a showing of good cause. The Final Environmental Statement on the application for construction permits (FES-CP) contained information on the effects of salt deposition caused by the Palo Verde Nuclear facility. *See* Staff Response at 3-6. Notice of the publication of the FES-CP was published in the *Federal Register* on February 23, 1976. 41 *Fed. Reg.* 8000. Section 3.6.2 of the FES-CP stated that:

> the staff's calculations suggest that the maximum depositions will be somewhat lower than those calculated by the applicant, but not to a significant extent. . . .
>
> It is important when considering the results of such calculations, to realize that at the present state of the art, drift model predictions may differ by a factor of 10 with observed values. Thus, predicted values can serve only as indications, not rigorous determinations. FES-CP at 3-21, 3-25.

An Atomic Safety and Licensing Board authorized the issuance of construction permits for Palo Verde Units 1, 2 and 3 on May 24, 1976. *Arizona Public Service Company, et al.* (Palo Verde Nuclear Generating Station, Units 1, 2 and 3), LBP-76-21, 3 NRC 662 (1976). Concerning salt drift, the Board found that:

> The degree of impact is presently not predictable. . . . The record supports a finding that these effects will be temporary and/or localized and are expected to be minimal." *Id.* at 686.
>
> Chemical deposition, principally salt from operation of the cooling towers, will occur on the site and to a lesser degree on the land surrounding the site and may alter salt sensitive flora and fauna. *Id* at 695.

West Valley's claim that it "only recently received indications that salt deposition might pose a major threat to agriculture in the PVNGS area"[2] is therefore without merit. Information on the effect of salt drift on agriculture was available even before construction permits were issued for the Palo Verde units.

West Valley recognizes that a claim that it relied on the NRC Staff to protect its interests is insufficient to constitute good cause for late intervention. A petitioner cannot sit back and observe the proceeding, and then intervene upon deciding that its interest is not being adequately protected by existing parties. *South Carolina Electric & Gas Company, et al.* (Virgil C. Summer Nuclear Station, Unit 1), LBP-81-11, 13 NRC 420, 423 (1981). *Cf. Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-583, 11 NRC 447, 448 (1980); *Puget Sound Power and Light Company, et al.* (Skagit Nuclear Power Project, Units 1 and 2), ALAB-559, 10 NRC 162, 172-73 (1979), *vacated as moot* CLI-80-34, 12 NRC 407 (1980); *Duke Power Company* (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-440, 6 NRC 643, 644 (1977). It must be

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[2] Memorandum at 8.

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established that Petitioners were furnished erroneous information on matters of basic fact and that it was reliance upon that information that prompted their own inaction. *Puget Sound Power and Light Company, et al.* (Skagit Nuclear Power Project, Units 1 and 2), ALAB-552, 10 NRC 1, 9 (1979). This showing has not been made. West Valley alleges that the Operating License Final Environmental Statement (FES-OL) specifically states that "the staff does not expect impacts from salt-drift deposition." Memorandum at 8. Since no citation has been furnished for this purported quote, we can only assume that the passage referred to is one of those which appear in Section 5.4.1 of the FES-OL:

> Although the effluents from the station's cooling towers will have atmospheric impacts (such as fogging due to the visible plume, wetting and salt deposition due to drift, visible plumes aloft) the staff believes that operation of these towers will produce no appreciable offsite impacts, and the impacts that may occur will be less than those predicted in the FES-CP (Section 5.3.2). This conclusion is based primarily on more recent observations of atmospheric impacts at power plants with mechanical-draft cooling towers (MDCTs) and on the changes in the location and design of the PVNGS towers (from rectangular to circular MDCTs) . . .
>
> Based on the above evaluations, the staff concludes that the change in design and in the location of the station's cooling towers will result in no appreciable offsite impacts due to fogging and will result in drift deposition rates that will be less than those predicted in the FES-CP.

FES-OL at 5-8, 5-9

Identical information was first presented in the October, 1981 Draft Environmental Statement for the Palo Verde operating licenses for Units 1, 2 and 3. It is consistent with the information presented in the FES-CP, which foresaw that the Staff's calculations might find the maximum depositions to be somewhat lower than the applicant had predicted. FES-CP at 3-21. We therefore reject Petitioner's assertions that the Staff furnished misleading or clearly erroneous information or that they could not have previously known that salt depositions might have an effect on local agriculture. We conclude that Petitioner has not established good cause for late intervention.

(ii) The Availability of Other Means Whereby the Petitioner's Interest Will Be Protected

Applicants and Staff allege that West Valley's interests may be adequately protected by the availability of legal action for damages, trespass or private nuisance should salt emissions from Palo Verde cause damage to its crops and land. Applicants' Response at 23, Staff's Response at 19. We disagree. These purported remedies presuppose the doing of damage which could cost the members of West Valley their livelihood. Economic compensation for ruined crops may

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scarcely be considered an adequate remedy for continuous salt deposition. This solution could easily expose the members of West Valley to the prospect of multiple repetitive lawsuits, as well as rendering their land worthless. A successful suit for trespass or nuisance would require more burdensome and expensive modification than would identifying and, if necessary, remedying any problems before the Palo Verde units are put into operation. We find that intervention in this proceeding is the only adequate means to protect West Valley's interest.

(iii) *The Extent to Which the Petitioner's Participation May Reasonably Be Expected to Assist in Developing a Sound Record*

The effect of salt deposition from Palo Verde has not been, and cannot be, precisely measured. As previously stated, the Board found at the construction permit stage that the degree of impact was not predictable. *Palo Verde*, 3 NRC at 686; *see infra* at 2027. The Staff's FES-OL could do no more to improve on this fact than to state a belief based on observations of other plants and on the location and design of the Palo Verde cooling towers. FES-OL at 5-8, 5-9; *see infra* at 2028. The Applicants admit that the operational Environmental Protection Plan is still in its formative stage, and that environmental technical specifications have not yet been drafted. Applicants' Response at 48. Applicants further state that "[i]f Petitioner or its consultants have any concerns respecting the scope or details of the program, there is ample time to bring them to the attention of the Applicants and/or the NRC Staff. In any event, Applicants commit to faithfully consider any monitoring suggestions Petitioners may choose to offer at this time or any later date." *Id.* at 48-49.

West Valley has filed a lengthy petition containing the reports of three experts on the subject of salt deposition on agriculture.[3] It has indicated that these experts are available to testify. Memorandum at 12. Considering the acknowledged paucity of information on the consequences of salt drift from Palo Verde to the West Valley lands, and the fact that the operational Environmental Protection Plan has not yet been formulated, the testimony of these experts may make a valuable contribution to the record. We need not decide the merits of that testimony in order to admit Petitioner as a party. *See Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 549 (1980).

To reopen the record to examine West Valley's information would enable the Board to more carefully delineate the nature and extent of management's monitoring program, the possibility of its success, and its impact on agricultural crops. It would also enable us to determine whether technical modifications of at least Units 2 and 3 are feasible before they are ready to be put into operation.

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[3] Dr. Edward Davis of the Johns Hopkins University Applied Physics Laboratory, Dr. Charles Mulchi of the University of Maryland Department of Agronomy and Dr. Michael Golay of the Massachusetts Institute of Technology Department of Nuclear Engineering.

The Board would prefer that salt deposition problems be identified and remedied before all three Palo Verde units are operating so that action under 10 CFR §2.206 once the damage has been done, as Applicants suggest,[4] may be avoided. It is therefore the Licensing Board's belief that the information offered by Petitioners may be of considerable value in developing the record.

(iv) The Extent to Which the Petitioner's Interest Will Be Represented by Existing Parties

No other party to this proceeding advanced any contentions bearing upon the effects of salt deposition on agriculture. Therefore, Petitioner's interests have not been represented in this proceeding.

(v) The Extent to Which the Petitioner's Participation Will Broaden the Issues or Delay the Proceeding

The record in this proceeding was closed on June 25, 1982. Unit 1 is scheduled to go into operation in August, 1983,[5] Unit 2 in 1984 and Unit 3 in 1985.

The admission of West Valley as a party to this proceeding could potentially delay the operation of Unit 1. Recognizing this, West Valley suggests in its petition that since it is ultimately concerned with the total amount of salt deposition from the three Palo Verde Units, the NRC may require only limited modifications on Unit 1, if modification should be necessary, leaving the more complex modifications for Units 2 and 3. Memorandum at 14. Applicants seem to agree that this type of procedure would lessen the impact of delay, but discount such a possibility because "West Valley did not offer to exclude Unit 1 from any reopened proceeding." Applicants' Response at 31 n.12. Although West Valley did not make this offer, the Licensing Board may exercise its discretion in excluding Unit 1 from any reopened proceeding. The Board agrees with Staff and Applicants that to reopen the record on Unit 1 may well delay the proceeding past the projected date for fuel loading. Petitioner suggests, however, that "there are a variety of flexible technical solutions which would assure that each unit of PVNGS begins operation on schedule." Memorandum at 14. If we were to restrict a reopened proceeding to testimony on the amount of salt deposition from Units 2 and 3, while allowing Unit

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[4] *See* Applicant's Response at 49.

[5] *See* Staff Response at 20.

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1 to begin operation as scheduled, we could examine the Applicants' monitoring program and build a record on the technical aspects of salt deposition without delaying the operation of any Palo Verde Unit. In this way, the total amount of salt deposition may be reduced, if necessary, by modifying Units 2 and 3 only. This course of action would cure the delay factor.

2. Balancing the Five Factors

Petitioner West Valley has not met the heavy burden of proving good cause for late intervention. It has, however, stated contentions which have not previously been set forth by any party to this proceeding. It offers testimony from acknowledged experts on an issue which has not been finally resolved. West Valley's standing to bring these contentions, were they timely filed, would be undisputed. *See* Staff Response at 11 n.2. Salt deposition from the three Palo Verde units might potentially destroy the livelihood of West Valley's members.

The crucial factor in this balance is that of delay. Although West Valley has a strong interest in this proceeding, it must not be allowed to hold up the operation of Unit 1 without good cause. With respect to Unit 1, therefore, the balance of five factors weighs against the Petitioner.

This is not the case with Units 2 and 3. To permit Unit 1 to begin operation on schedule while reopening the record with respect to Units 2 and 3 should cause no delay whatsoever, while offering an opportunity for early examination and, if necessary, remediation of the problem of salt deposition. The Board finds, therefore, that although the reasons for petitioner's tardiness lack merit, the other factors specified in §2.714(a) tip the balance in favor of reopening the record to admit West Valley as a party with respect to Units 2 and 3. In reaching this result, the Board rules that Contention III is admissible for litigation. Contention III reads as follows:

> The salt deposition from the PVNGS will reduce the productivity of agricultural lands owned by West Valley members.

STANDARDS FOR REOPENING THE RECORD

Although we have ruled that the five-factor balance weighs in favor of granting West Valley's untimely petition to intervene, the record in this proceeding was closed on June 25, 1982. West Valley, therefore, has the additional burden of proving that its motion to reopen the record to admit new testimony should be granted. The test for meeting this burden was stated in *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-598, 11 NRC 876, 879 (1980) as follows:

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> (1) Is the motion timely? (2) Does it address significant safety (or environmental) issues? (3) Might a different result have been reached had the newly proffered material been considered initially?

Cf. Kansas Gas and Electric Company and Kansas City Power and Light Company (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978); *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973).[6]

The Board considers the salt deposition issue to be both a significant and a serious environmental issue. Land suitable for farming is in short supply in Arizona. Thus, special public interest implications are involved. The spectre of possibly rendering unusable some of what little fertile land is available impels us to compile as comprehensive a record as possible to ensure that this will not happen. While we would have wished to have Petitioner's information presented earlier in the proceeding, it was presented in advance of the issuance of the Initial Decision and well before the fuel loading date of any Palo Verde unit. In *Vermont Yankee, id.*, a motion to reopen the record was denied where the reactor was already in operation when the motion was filed. As we discussed *infra*, reopening the record with regard to Units 2 and 3 only will cause no delay in the operation of Unit 1 and will perhaps ameliorate possible future problems.

The Board has previously noted that the record on salt deposition is sparse. Had further information been made available before the close of the hearing, we would have incorporated it into the record. Were it found that the amount of salt deposition to be produced could be harmful to area agriculture, as intervenors allege, a condition could have been written into the operating license requiring the salt monitoring program that Applicants have already committed themselves to implementing.[7] In consideration of the above, the Board feels that there is adequate cause to reopen the record to consider Petitioner's contentions.

ORDER

For the foregoing reasons and in consideration of the entire record in this matter, it is this 30th day of December, 1982

ORDERED

1) That the petition of West Valley Agricultural Protection Council, Inc., to intervene in this licensing proceeding is *granted;*

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[6] At least one Licensing Board has expressed some doubt that these standards relate to situations in which reopening is requested on an issue which has not been previously heard. *Cincinnati Gas & Electric Company, et al.* (Zimmer Nuclear Power Station, Unit 1), LBP-82-54, 16 NRC 210 (1982), *rev'd. on other grounds*, CLI-82-20, 16 NRC 109 (1982). Since we conclude that Petitioner has met the standards for reopening the record, we need not decide this issue. We do note, however, that the issue of salt deposition has not been previously litigated in this proceeding.

[7] *See* Applicants' Response at 47.

2) That the record in this proceeding is reopened for Units 2 and 3 but remains closed for Unit 1;

3) That the record will be reopened for the specific limited purpose of considering the salt deposition issue;

4) That Contention III of West Valley's petition is admitted as an issue in controversy for the reopened proceeding;

5) That the Board will schedule a prehearing conference to discuss the disposition of Petitioner's other contentions and the relief sought; and

6) That West Valley's November 18, 1982 "Supplemental Memorandum" in support of its petition to intervene is an unauthorized filing and accordingly has not been considered by the Board.

THE ATOMIC SAFETY AND
LICENSING BOARD

Robert M. Lazo, Chairman
ADMINISTRATIVE JUDGE

Dr. Richard F. Cole
ADMINISTRATIVE JUDGE

Dr. A. Dixon Callihan
ADMINISTRATIVE JUDGE

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Cite as 16 NRC 2034 (1982) LBP-82-118

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Charles Bechhoefer, Chairman
Dr. Frederick P. Cowan
Dr. Jerry Harbour

In the Matter of

Docket Nos. 50-329-OM&OL
50-330-OM&OL
(ASLBP Nos. 78-389-03-OL
80-429-02-SP)

CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

December 30, 1982

The Licensing Board rules on rewritten contentions of an intervenor in the operating license proceeding.

RULES OF PRACTICE: CONTENTION, ADMISSIBILITY OF

In considering the acceptability of a contention, a Licensing Board may not determine factual questions going to the merits of the contention. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 547-49 (1980).

RULES OF PRACTICE: CONSIDERATION OF ISSUES INVOLVED IN RULEMAKING

When a matter is involved in rulemaking, the Commission may elect to require an issue which is part of that rulemaking to be heard as part of that rulemaking.

Where it does not impose such a requirement, an issue is not barred from being considered in adjudications being conducted at that time.

RULES OF PRACTICE: CONSIDERATION OF ISSUES INVOLVED IN RULEMAKING

During a rulemaking on a particular subject, there shall be no different adjudicatory consideration of an issue (absent Commission direction to the contrary) than there would have been in the absence of the rulemaking.

RULES OF PRACTICE: CONSIDERATION OF ISSUES INVOLVED IN RULEMAKING

The question whether an issue should be dealt with through rulemaking or adjudication is one of policy for the Commission to make; it is beyond the scope of authority delegated to Licensing Boards. Where the Commission has not limited the authority of Licensing Boards to hear an issue, a Board cannot decline to hear the issue just because it happens to involve a matter involved in rulemaking.

RULES OF PRACTICE: CHALLENGE TO COMMISSION REGULATIONS

Where standards appear in the Standard Review Plan and not in a specific regulstion, they may be modified, upon proper showing, at the behest of an applicant or other party.

NEPA: FUEL CYCLE

As a result of the Commission's October 29, 1982 policy statement on fuel cycle matters, Licensing Boards are required to consider the current Table S-3 (10 CFR §51.23(c)) as still in effect, despite a Court ruling which raised questions concerning its validity. Fuel cycle matters must be considered only under that Table, and a contention challenging the Table must be dismissed. Any decision or license authorization relying on Table S-3 will be subject to the outcome of pending judicial proceedings in this matter.

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MEMORANDUM AND ORDER
(Rewritten Contentions of M. Sinclair)

A.

In our Special Prehearing Conference Order, dated February 23, 1979, we accepted a number of contentions of intervenor Mary Sinclair (numbered 28-57)[1] for purposes of discovery, subject to their being rewritten following the completion of discovery and the issuance in some cases of further Staff reports. We also rejected two contentions as written (numbered 6 and 7) but permitted them to be resubmitted after discovery.

Ms. Sinclair submitted rewritten versions of various of these earlier contentions on August 12, 1982 (numbers 28, 30, 31, 32, 35, 36, 40, 45, 50 and 52) and September 20, 1982 (numbers 6, 34, 37, 43, 57 and, in a separate filing, 56). She has withdrawn other contentions of those which were eligible to be rewritten. The Applicant responded to these contentions on September 3 and 30, 1982 (2 filings on September 30). The Staff filed its responses on September 10 and 30, 1982. As permitted by Board orders, Ms. Sinclair responded to the views of the Applicant and Staff on October 4 and 15, 1982.

In our Memorandum and Order dated September 17, 1982, we accepted contentions 28 (Water Hammer) and 30 (Steam Generator Tube Degradation), to which neither the Applicant nor Staff had any objection. We are now renumbering these contentions as Sinclair contentions 3 and 4, respectively (see Appendix 1 to this Memorandum and Order).

At the evidentiary hearing on November 22, 1982, we announced our rulings on the remaining rewritten contentions (Tr. 9854-72). We stated that we would issue a further written opinion explaining the grounds for our rulings. We do so here.

1. Contention 6

This contention asserts that, as a result of certain specified deficiencies in the construction QA/QC program, the Midland facility fails to meet applicable requirements and the QA/QC program has failed to detect such violations. The Staff offers no objection to this contention. The Applicant objects to two assertions which, it claims, are open-ended allegations without basis or adequate specificity.

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[1] The numbers referred to are those appearing in the contentions as submitted, modified to eliminate duplicate numbers after 45 by numbering consecutively from that point on. All accepted contentions have been renumbered as indicated in Appendix 1 to this Memorandum and Order. In the future, contentions should be identified through the renumbered nomenclature.

The Applicant also objects to two subparts of the contention on the ground that the contention ignores the Applicant's resolution of the matters in question.

We are accepting this contention with two sentences revised to eliminate the open-ended assertions to which the Applicant objects. (Ms. Sinclair offers no objection to one of these revisions.) The Applicant's objections to the two subparts cannot be accepted at this time, inasmuch as they go to the merits of the contention. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 547-49 (1980). In its revised form, this contention is renumbered as Sinclair contention 1 (*see* Appendix 1).

2. Contention 31

This contention relates to Anticipated Transients Without Scram (ATWS). It sets forth several reasons why that event allegedly could occur at Midland. The Applicant opposes this contention primarily on the ground that ATWS is the subject of a pending rulemaking, citing *Potomac Electric Power Company* (Douglas Point Nuclear Generating Station), ALAB-218, 8 AEC 79 (1974). The Staff offers no objection to this contention, to the extent the contention seeks to litigate the Applicant's conformance with current regulatory requirements relating to ATWS (in particular, §15.8 of the Standard Review Plan). In her reply, Ms. Sinclair explicitly states that the contention seeks only to question the Applicant's conformance with existing requirements.

In our Prehearing Conference Order dated August 14, 1982, LBP-82-63, we pointed out that

> When a matter is involved in rulemaking, the Commission may elect to require an issue which is part of that rulemaking to be heard as part of that rulemaking. Where it does not impose such a requirement, an issue is not barred from being considered in adjudications being conducted at that time.

16 NRC 571, 584-85. The Applicant here concedes that the *Federal Register* notice initiating the ATWS rulemaking (46 *Fed. Reg*. 57521, November 24, 1981) does not explicitly bar Licensing Boards from taking up an ATWS issue. But it claims that the *Douglas Point* line of cases includes no such requirement. In other words, as we understand the Applicant's view, once a matter becomes the subject of rulemaking, it is barred from consideration in licensing adjudicatory proceedings.

We disagree with the Applicant's reading of the *Douglas Point* line of cases. In all of the cases cited by the Applicant, the subject matter of the rulemaking was a matter which, in the absence of a modification of the rules (through the pending rulemaking or otherwise) could not have been considered through adjudication. Thus, *Douglas Point* involved the adjudicatory consideration of the environmental effects of certain aspects of the uranium fuel cycle (in particular, waste disposal).

A rulemaking on that subject was completed on April 22, 1974 (39 *Fed. Reg.* 14188, 14191), when the Commission promulgated the predecessor to its current Table S-3 (*see* 10 CFR §51.23(c)). Prior to that time, Appeal Board rulings (which had explicitly been permitted by the Commission to remain in effect during the rulemaking) precluded consideration of such fuel cycle issues. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-56, 4 AEC 930 (1972); *id.*, ALAB-179, 7 AEC 159, 163-64 (1974); *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-60, 5 AEC 261 (1972); *Long Island Lighting Company* (Shoreham Nuclear Power Station), ALAB-99, 6 AEC 53 (1973). The *Douglas Point* ruling relates to the consideration of fuel cycle issues prior to the adoption of Table S-3. The Appeal Board's statement that Licensing Boards "should not accept in individual license proceedings contentions which are * * * the subject of general rulemaking" (8 AEC at 85) must be read in that context. We construe the *Douglas Point* line of cases, therefore, as standing for no more than that, during a rulemaking on a particular subject, there shall be no different consideration of an issue (absent Commission direction to the contrary) than there would have been in the absence of the rulemaking.

It is well established, of course, that the Commission has authority to determine whether a particular issue shall be decided through rulemaking, through adjudicatory consideration, or by both means. *F.P.C.* v. *Texaco, Inc.*, 377 U.S. 33, 42-44 (1964); *United States* v. *Storer Broadcasting Co.*, 351 U.S. 192, 202 (1955). "[T]he choice made between proceeding by general rule or by individual, ad hoc litigation is one that lies primarily in the informed discretion of the administrative agency." *N.L.R.B.* v. *Bell Aerospace Co.* 416 U.S. 267, 293 (1974). See general discussion in *Douglas Point, supra,* 8 AEC at 84. In the exercise of that authority, the Commission may preclude or limit the adjudicatory consideration of an issue during the pendency of a rulemaking, and in the past it has on occasion done so. *See, e.g.*, 44 *Fed. Reg.* 61372, 61373 (October 25, 1979) (the so-called "waste confidence" proceeding).

Because there appears to be no legal requirement dictating whether a particular issue must be considered through rulemaking or adjudication, the choice becomes one of policy. Policy questions of this sort are for the Commission to make (*e.g.*, through notices of rulemaking) but are beyond the scope of authority delegated to Licensing Boards. Where — as in the case of ATWS — the Commission has not limited the Licensing Boards' authority to hear an issue, a Licensing Board cannot decline to hear such an issue just because it happens to involve a matter involved in rulemaking. *See Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 & 2), LBP-82-1A, 15 NRC 43 (1982). We will therefore

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consider the ATWS issue under the same standards as would have governed consideration of that issue prior to the rulemaking.[2]

In electing this course of action, we note that we are avoiding an undesirable effect which adopting the Applicant's reading of *Douglas Point* necessarily would entail. Namely, where conformance with a safety standard has been a litigable issue, the consideration by the Commission of changes in that standard would, under the Applicant's reading, completely remove the conformance issue from adjudicatory consideration. The Commission routinely considers changes in many of its safety and environmental standards. Thus, adoption of the Applicant's position would likely have the effect of removing many significant and traditionally acceptable issues from adjudicatory consideration.[3] Absent explicit direction from the Commission, we are unwilling to sanction this result, which we view as inconsistent with the NRC's regulatory framework.

We are therefore admitting contention 31. We are rewording it to clarify certain statements to which the Applicant directed our attention. The contention as accepted has been renumbered as Sinclair contention 5 (*see* Appendix 1).

3. Contention 32

This contention relates to reactor vessel fabrication and potential embrittlement and pressurized thermal shock. The Applicant and NRC Staff object only to that portion of the contention which referenced a memorandum of Demetrios Basdekas, on the ground that this portion is so vague that it lacks the requisite specificity, basis and nexus. In her reply, Ms. Sinclair acknowledged that the Basdekas quotation is not specific to Midland and amended her contention to omit the reference. As so amended, we admit the contention, renumbered as Sinclair contention 6 (see Appendix 1).

4. Contention 34

As we read this contention, it raises certain questions concerning (1) pipe supports, and (2) restraints (including snubbers used for component restraints). The Staff offers no objection to this contention. The Applicant objects to the portion concerning the use of snubbers as component supports, on grounds of lack

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[2] Since ATWS particularized standards appear in the Standard Review Plan and not in a specific regulation (other than general coverage in the General Design Criteria, 10 CFR Part 50, Appendix A), the particular ATWS standards may be modified, upon proper showing, at the behest of an applicant or other party. *See Perry*, LBP-82-1A, *supra*. Ms. Sinclair here seeks to litigate only conformance with current standards, and we are so limiting her contention.

[3] The Applicant sought to have Ms. Sinclair's revised new contention 7 rejected on the same basis. We declined to do so. LBP-82-63, *supra*. That contention is being renumbered as Sinclair contention 18 (*see* Appendix 1).

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of specificity (and in particular because it parallels the wording used in the 1978-9 version of the contention). The Applicant opposes the remainder of the contention on the ground that it represents a new contention not accompanied by an adequate showing of good cause for lateness.

In her reply, Ms. Sinclair claims that the contention is reasonably specific. She also indicates that, through discovery, she obtained information relating to the operability of snubbers as a component of the pipe support system, and that the contention represents a "fair development" of the issue from its initial formulation in 1978. We agree. We note, with respect to the Applicant's reference to unchanged wording since 1979, that in our 1979 Special Prehearing Conference Order we did not reject this contention for lack of specificity; rather, we grouped it with others raising generic safety issues and, recognizing continuing developments in this area, required all such contentions to be rewritten after discovery.

We are renumbering this contention as Sinclair contention 7 (*see* Appendix 1).

5. Contention 36

This contention raises several questions concerning systems interaction at the Midland facility. The Applicant objects only to the last two sentences of the contention. The Staff objects to the last sentence.

The next-to-last sentence claims that the Staff, in its SER, has failed to require a comprehensive program to evaluate systems interaction. The Applicant claims that it in fact has proposed such a program, although it appears in other documents. This objection goes to the merits of the contention and cannot be given credit at this stage of the proceeding. Moreover, as Ms. Sinclair points out, the SER explicitly states that the Applicant has not described such a comprehensive program (SER, p. C-12).

As for the last sentence, the Applicant and Staff oppose it because it is based on the affidavit of Mr. Howard, portions of which are to be litigated in conjunction with another contention (renumbered Sinclair contention 15); and also because it lacks specificity, since it does not pinpoint the portions of the Howard affidavit on which it is based. In her reply, Ms. Sinclair identified the particular pages of that affidavit bearing on the allegations of this contention.

We accept this contention in its entirety, but with the last sentence limited to the particular segments of the Howard affidavit identified by Ms. Sinclair. We have renumbered this contention as Sinclair contention 8 (*see* Appendix 1).

6. Contention 37

This contention questions the current design criteria for the postulation of pipe breaks. Both the Applicant and Staff point out that the basis cited relates to ECCS

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performance during small-break LOCAs and has nothing to do with piping design. They also assert that, if ECCS performance is sought to be challenged, the contention is untimely, without adequate justification pursuant to 10 CFR 2.714(a)(1). We agree with these claims and reject the contention.

7. Contention 40

This contention deals with the lack of adequate environmental qualification methods to satisfy the requirements for safety-related equipment. It relies on a statement in the SER indicating that environmental qualification is still an open item. The Applicant first asserts that the contention should be rejected because it raises a question of law as to applicable environmental qualification standards. The Applicant also claims that, if conformance with current standards is being questioned, the contention lacks specificity, in that it fails to point out the respects in which the environmental qualification program is deficient. The Staff opposes the contention on the latter ground.

Ms. Sinclair replies that she is not making a legal challenge and is questioning only the Applicant's ability to meet current requirements. She stresses that the SER states that the Applicant has not provided the Staff with adequate information to enable the Staff to evaluate the environmental qualification program, and that in such circumstances her claim that the Applicant has not demonstrated that its program meets current NRC requirements follows logically. We agree and accept the contention, to the extent it asserts that current requirements are not satisfied (renumbered as Sinclair contention 9, *see* Appendix 1). Once the Staff has evaluated the Applicant's environmental qualification program, and prior to the commencement of hearings on this issue, Ms. Sinclair will be required to define more specifically the deficiencies (if any) which she perceives in the program.

8. Contention 45

This contention alleges that asserted deficiencies in control cables can cause a loss of offsite power. The Applicant objects because of failure to state a basis with reasonable specificity — *i.e.*, a lack of showing how control cable deficiencies (dealt with by the newspaper article cited) could have any effect on the reliability of offsite power. The Staff opposes the contention for lack of clarity. We reject it for both those reasons. We note that, in her reply, Ms. Sinclair referred to a number of instances where electrical malfunction can result in a loss of offsite power, but she did not demonstrate how control cable deficiencies (were they to exist) could affect offsite power. Her assertion that there will be more than usual snow and icing on elevated objects such as power lines does not accomplish this purpose; in any

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event, claims regarding snow and icing will be litigated under revised contention 56 (renumbered as Sinclair contention 11).

9. Contention 50

This contention asserts that occupational exposures of workers cannot be controlled because of quality control failures built into the heating, ventilating and air conditioning system. It cites the disclosures of employees of the Zack Co. (the HVAC subcontractor).

The Applicant does not object to this contention. The Staff indicates that it lacks particularity in that, except for Dean Darty, none of the Zack Co. employees have been identified.

We admit this contention; but we note that, in resolving the contention, the heretofore unidentified Zack Co. employees will have to be identified (possibly under protective order, should confidentiality be found warranted) and the particular quality control failures in question specified. We renumber this contention as Sinclair contention 10 (*see* Appendix 1).

10. Contention 52

As the Applicant points out, this contention, which questions the reliability of the emergency onsite diesel generator, as well as the fuel oil and service water lines entering and exiting the diesel generator building, overlaps issues already being litigated in the soils portion of this consolidated proceeding and hence is redundant. Ms. Sinclair agrees that, if all issues regarding the reliability of the emergency onsite diesel generator are to be litigated, there would be no need to litigate contention 52. We reject the contention on the ground that no issues are presented here which are not being litigated elsewhere. (We decline to base this ruling on the Staff's response, which in our view goes to the merits of the contention.)

11. Contention 56

This contention was conditionally accepted by us in our 1979 Special Prehearing Conference Order. But at the prehearing conference in August, 1982, Ms. Sinclair withdrew this contention because of a similar one being advanced by Ms. Stamiris. When it appeared that Ms. Stamiris' contention might be rejected, Ms. Sinclair sought to resubmit her contention. The Staff indicated that it would not object on timeliness grounds, and neither the Applicant nor Staff have advanced timeliness objections.

The contention asserts that, should all AC power be lost to the Midland facility, station blackout could occur; a variety of bases are assigned. Although these bases

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are not identified by number, the Staff has divided them into 8 bases and has numbered them consecutively. The Staff offers no objection to the contention insofar as it is supported by bases 1, 5, 7, and part of 8. The Applicant objects to the entire contention, either for vagueness or because of coverage in the soils hearings.

At the outset, we reiterate that station blackout requires a loss of both offsite and onsite power simultaneously. We have considered each basis in the context of whether it in conjunction either with other bases or a total loss of offsite power could result in station blackout (Tr. 9866). We will treat each basis in the order identified by the Staff.

The first basis concerns ice storms and the effect of ice formation on cables, power lines and other equipment. The Staff offers no objection to this basis, and the Applicant opposes it on the merits (arguments which we cannot accept in determining admissibility of a contention). We accordingly accept it as a basis for the contention. (We are modifying the last sentence to clarify its applicability only to "exterior safety-related" equipment "associated with" the diesel generator building.)

The second basis, opposed by the Staff as well as the Applicant, raises questions with respect to the ability of the diesel generator building to withstand ice and snow loads. As we pointed out in rejecting a somewhat similar contention advanced by Ms. Barbara Stamiris;

> The coupling of alleged building failure with station blackout presumes the negative outcome of the not-yet-completed OM proceeding (an outcome which, on its own, would prevent issuance of an operating license, if not corrected).

LBP-82-63, *supra*, 16 NRC at 591. For this reason, we reject basis 2 as a permissible basis for this contention.

The third basis questions the adequacy of the combustion air intake and exhaust systems for the diesel generator building, because of asserted QC failures of the Zack Co., the subcontractor that installed the systems. The basis is opposed by the Staff and Applicant because, they claim, it raises the same QA questions which are already the subject of admitted contentions (Sinclair renumbered contentions 15, 16 and 17, *see* Appendix 1). In her reply, Ms. Sinclair agreed to litigate the issue under those other contentions. However, as the Board observed during the hearing, the condition of the mechanical components of the combustion air intake and exhaust systems (raised by this basis) is not necessarily coextensive with the acceptability of the Zack QA program (raised by contentions 15-17) (Tr. 9866-68). Moreover, the Board was recently notified about problems which may exist with respect to the diesel generator exhaust piping. *See* letter dated October 28, 1982, from James E. Brunner, CPC, to Licensing Board; *see also* Nonconformance Report MO1-5-2-166, Rev. 1, dated November 30, 1982, transmitted to the Board and parties by letter dated December 14, 1982 from Mr. Brunner. These conditions

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might contribute to station blackout. In these circumstances, we are accepting for litigation the third basis of this contention.

The fourth basis relates to misrouted cables; it is founded on testimony presented earlier in this proceeding. As the Staff points out, that issue is not yet closed and will be heard in later hearings on the QA program. Moreover, the claimed relationship to station blackout is impermissibly vague. We therefore reject basis 4 for these reasons.

The fifth basis claims that offsite power lines share a common corrider and could be affected simultaneously by heavy icing. The Staff does not object to this basis; the Applicant does not mention it specifically. Since the allegations, if proved, identify a situation which might contribute to station blackout, we accept this basis.

The sixth basis suggests that there should be a specific time requirement during which the plant must be capable of accommodating a station blackout. We are unaware of any such requirement imposed by NRC rules or requirements. For that reason, we reject the basis as a matter of law. We also note that Ms. Sinclair has made no showing that the time within which decay heat will be removed in the event of station blackout is inadequate.

The seventh basis, which is not opposed by the Staff, seems to raise a turbine missile issue; it claims that the placement and orientation of each turbine generator is unfavorable and could adversely affect the operation of the auxiliary feedwater system. No nexus to station blackout is supplied, and we are not aware of how the allegations would relate to station blackout. We are thus rejecting this basis.

The eighth and final basis identifies 7 loss-of-offsite power events at other reactors. With respect to the first 6, no nexus of the events to the Midland facility is provided; indeed; in only one case is the nature of the event set forth, but the detail is insufficient for us to ascertain its relationship to Midland. With respect to the seventh event, we agree with the Staff that the contention is alleging that, as happened at Big Rock, severe weather conditions increase the likelihood and the duration of a loss of offsite power. Limited to this event, we accept this basis as support for the contention. (We are deleting the parenthetical reference to the effect of weather conditions on emergency planning, as it has no bearing on this contention. Those conditions may, however, be pertinent to Sinclair contention 2, as renumbered.)

In her reply submitted on October 15, 1982 (at pp. 4-5), Ms. Sinclair referred to several other events at other reactors (Rancho Seco, Turkey Point 3 and 4, and Oconee) which, she claimed, could occur at Midland and contribute to station blackout. We were not sure of the relationship between these reactors and Midland, particularly with respect to the similarity of the respective diesel generators. We therefore requested the Applicant and Staff to brief this question (Tr. 9870). We did not establish a specific date for such briefs, and we have not yet received

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them. It is possible that the referenced events could constitute a further basis (or an addition to basis 8) for this contention. We are deferring ruling on this matter until receipt of briefs. The Applicant and Staff (and other parties if they wish) should file such briefs by Monday, January 24, 1983. Thereafter, we will determine whether the contention should be expanded.

As for now, we are accepting this contention to the extent we have indicated. It is renumbered as Sinclair contention 11 (*see* Appendix 1); the bases which we are admitting (1, 3, 5, and part of 8) have been redesignated as bases 1-4.

12. Contention 57

This contention questions the adequacy of the electrical system. Neither the Staff nor Applicant objects to the contention insofar as its scope is limited to fire protection (rather than extending generally to accident conditions). Ms. Sinclair agreed to this limitation, and we are accepting the contention as so limited. We have modified the contention to reflect this limitation (see Tr. 9870-71) and have renumbered it as Sinclair contention 12 (*see* Appendix 1).

B.

In our February 23, 1979 Special Prehearing Conference Order, we rejected Ms. Sinclair's proposed contentions 20 and 21 as impermissible challenges to the Commission's fuel cycle rule (Table S-3, 10 CFR §51.23(c)). Thereafter, as a result of the April 27, 1982 decision of the U.S. Court of Appeals in *Natural Resources Defense Counsel, Inc.* v. *NRC*, 685 F.2d 459 (D.C. Cir. 1982), which raised questions concerning the validity of certain aspects of Table S-3, Ms. Sinclair resubmitted a contention which challenges Table S-3. Because of our expectation of Commission guidance on how to deal with fuel cycle questions in licensing proceedings, we deferred ruling on the contention at the August 1982 prehearing conference. LBP-82-63, *supra*, 16 NRC at 580.

On September 9, 1982, Ms. Sinclair again resubmitted her Table S-3 contention, citing an August 16, 1982 Memorandum Order of the Court of Appeals on this same subject. The Applicant and Staff recommended that we continue to defer ruling on the contention pending issuance of the policy statement.

The policy statement on fuel cycle matters was issued on October 29, 1982. 47 *Fed. Reg.* 50591 (Nov. 8, 1982). Copies were transmitted to the Board and parties by the Applicant on November 4, 1982 and by the Staff on November 5. In its transmittal, the Applicant moved that Ms. Sinclair's fuel-cycle contention be dismissed. We heard oral argument on this motion on November 20, 1982 (Tr.

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9654-83).[4] The Staff supported dismissal of the contention on the basis of the policy statement. Ms. Sinclair (supported by Ms. Stamiris) challenged the validity of the policy statement on the basis of its inconsistency with the Court decision, and they sought either acceptance of the contention or, if we believed the policy statement required dismissal, a statement by us of our disagreement with the policy statement.

We do not believe it would be appropriate for us to comment on the validity of the policy statement or the adequacy of Table S-3 in its current form; among other things, we are not sufficiently knowledgeable of the underlying record in the Table S-3 rulemaking or before the Court of Appeals to render any comment that would be meaningful. We also note that the mandate of the Court of Appeals on the Table S-3 decision has not issued and will not issue for some time, inasmuch as the U.S. Supreme Court has granted certiorari.

We agree with the Applicant and Staff that the policy statement requires that we consider the current Table S-3 as being in effect; that we consider fuel cycle issues only in that context; and, as a result, that Ms. Sinclair's proposed fuel cycle contention be dismissed as an impermissible challenge to that rule. In accordance with the policy statement, our decision in the OL proceeding, and any license authorization which may eventuate therefrom, will be subject to the outcome of the judicial proceedings in this matter now before the Supreme Court. *See Mississippi Power & Light Company* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725 (1982). As we have indicated previously, should fuel cycle questions of the type sought to be litigated by Ms. Sinclair become litigable prior to the conclusion of this proceeding, we will permit Ms. Sinclair to resubmit her fuel cycle contention without regard to timeliness (assuming she does so within a reasonable time after any statement by the Commission which might permit such issues to be considered by us).

C.

In Appendix 1 to this Memorandum and Order, we are setting forth and renumbering all contentions accepted for the OL phase of this proceeding and not abandoned or dismissed. These contentions include those considered in our 1979 Special Prehearing Conference Order, our August, 1982 Prehearing Conference Order (LBP-82-63), our September 17, 1982 and October 29, 1982 (LBP-82-95, 16 NRC 1401) memoranda and orders, and this Memorandum and Order. Excluded from this listing are contentions being dealt with in the soils portion of this proceeding — *i.e.*, those of Ms. Stamiris dealt with in our Prehearing Conference

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[4] We granted the Staff's request to permit it to file a further statement on this matter (Tr. 9683). Thereafter, the Staff advised the Board by telephone that it did not wish to file such a statement.

Order dated October 24, 1980, Ms. Sinclair's original contention 24, and the single contention of Mr. Wendell H. Marshall.

In Appendix 2 to this Memorandum and Order, we are setting forth corrections to the portions of the transcript of November 22, 1982 (Tr 9854-72) in which we announced our rulings on Ms. Sinclair's rewritten contentions.

For the reasons stated, it is, this 30th day of December, 1982,

ORDERED

1. That Ms. Sinclair's rewritten contentions 6, 31, 32, 34, 36, 40, 50, 56 (in part), and 57 (renumbered as contentions 1, 5, 6, 7, 8, 9, 10, 11 and 12), to the extent indicated herein, are hereby *accepted*.

2. That the Applicant and Staff (and other parties that wish to do so) file briefs with respect to renumbered contention 11, as described on pages 2044-45, *supra*, by January 24, 1982.

3. That Ms. Sinclair's rewritten contentions 37, 45 and 52 are hereby rejected.

4. That Ms. Sinclair's proposed fuel cycle contention is hereby dismissed and her request dated September 9, 1982 is *denied*.

5. That transcript changes set forth in Appendix 2 are hereby *adopted*.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE

[Appendix 2 has been omitted from this publication but can be found in the NRC Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.]

APPENDIX 1

OL Contentions

Sinclair Contention 1 (formerly original contention 6)

Serious and repeated deficiencies in the quality assurance/quality control program for Midland demonstrate that construction of the facility has consistently failed to meet applicable requirements, and that the quality assurance/quality

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control program has failed to detect these violations and assure proper corrective measures.

Deficiencies in the quality assurance/quality control program at Midland include the following:

a. Violations of regulatory procedures

According to an internal NRC memorandum from R. B. Landsman, Soil Specialist, to W. D. Shafer, Chief, Midland section, dated August 24, 1982, the Applicant has violated tne Board's Order of April 30, 1982, by going ahead with construction activities in direct violation of a requirement to obtain prior NRC staff approval. That example indicates that the Applicant has engaged in deception.

b. Alteration of Weld Radiographs

According to I&E Bulletin No. 82-01, Rev. 1, Supplement 1 (August 18, 1982), alterations have been discovered in at least four sets of piping weld radiographs for piping supplied to Midland by ITT Grinell Industrial Piping, Inc. of Kernersville, North Carolina. These radiographs were altered over a period of six years. As a result of the alterations, the quality of the welds is unknown. It is doubtful that all of the affected welds can be identified and corrected since some may no longer be accessible for inspection.

This is a violation of Criteria I, II, VII, IX, X, XI, XV, XVI, and XVII of Appendix B to 10 CFR Part 50. Not only has the Applicant permitted the installation of noncomplying materials, it has failed to assure that its supplier has an effective quality assurance program as well. This extended failure in an area crucial to reactor safety raises serious questions about the existence of deficiencies in all vendor-supplied items.

c. Defective Welds in Control Panel

According to I&E Information Notice No. 82-34 (August 30, 1982), Midland Units 1 and 2 contain defective welds in the main control panels that were not prevented or detected as required by the quality assurance program.

d. Faulty welding, piping, and electrical installation

The following demonstrate quality assurance/quality control failures in a broad range of areas. They demonstrate, generally, that the Applicant was incapable of preventing or detecting construction failures through its quality assurance program. To the extent that the Applicant discovered such failures, it was through highly unusual reinspections, which are not a normal part of the quality assurance program, and which cannot be relied upon to assure reactor safety:

1. Non-Conformance Report of June 19, 1982, which is a part of the reinspection to which the Applicant has committed, states that 66 weld joints were non-conforming out of 146 reinspected.

2. Report on Safety Concern and Reportability Evaluation (June 21, 1982) discussed welding defects that were discovered during reinspection of a sample of installed vendor supplied structural beams. The report states, "The location of all [defective] beams is not known, but the sample included beams in the Auxiliary building and both containments . . . The safety impact of weld failure is unknown due to the diverse functions and locations of approximately 2,400 beams."

3. Quality Action Request (QARF 175) closed out August 24, 1982, indicates that an "increase of approximately 164% has been experienced in the area of (welding) deficiencies."

4. Non-Conformance Report, closed out on August 26, 1982, states that contrary to ASME requirements, radiographs submitted by Craven Energy Systems displayed mottlings in the vertical weld seams of the borated water storage tanks, a safety related building.

5. The NRC has identified (Inspection Reports 50/329/82-07 and 50/330/82-07) defective installation of pipe supports and restraints (NRC response to Interrogatories, p. 4), 127 deficiencies, 28% due to defective welds were reported.

6. According to Applicant's response to Inspection Report 82-07 (Aug. 13, 1982) in the Hanger Report (Aug. 9, 1982), results of the reinspection showed that out of 123 hangers inspected, only 55% were acceptable.

7. According to Applicant's May 5, 1982, report of the exit meeting of April 23, 1982, the reinspection conducted by Applicant of piping hangers that had previously been inspected and accepted by Bechtel QC revealed that 43.9% of the hangers inspected were identified as non-conforming. (Attachment 15 to Aug. 13, 1982 Report)

8. In its August 30, 1982, letter to the Applicant, Region III stated that while the Applicant's response identified corrective actions taken or planned to be taken regarding the 55 defective hangers identified in Applicant's reinspection, Region III has "no confidence that the remaining hangers have been installed in accordance with the original drawings and specifications."

9. The Safety Concerns and Reportability Evaluation (June 17, 1982) states that the minimum wall thickness of Piping Class ELB utilizes materials of a different allowable stress (17,500 psi) than the specifications for fittings (15,000 psi) for this class of piping.

10. Inspection Report 81-25, July 26, 1982, discussed, in addition to rodent damage to insulation, a multitude of discrepancies in the penetrations such

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as: "conductor insulation cracking at module-conductor interfaces; cracks in the module epoxy insulation; inadequate crimping by use of improper sized lugs, improper crimping, loose terminations, and use of the wrong crimp; butt splices improperly crimped which could be easily pulled apart and were covered with questionable insulation; and loose coaxial cable connections." These have not been prevented or properly detected by Applicant's quality assurance program.

Sinclair Contention 2 (formerly original contention 27)

Recently discovered information indicates that the Advisory Committee on Reactor Safeguards conditioned the acceptability of the present Midland site for the project on the existence of a highly effective evacuation system. However, no adequate evacuation plans exist. Aerial surveys of traffic conducted during the construction permit stage of these proceedings, and taken during shift changes, indicated that evacuation in an acceptable time cannot be accomplished. Further, relying on the evacuation plans of Dow Chemical Company is inadequate. During the evacuation following the recent chlorine leak, evacuation procedures were chaotic and all communications were either jammed or ineffectual. In fact, at an NRC conference held in Midland, Michigan on September 8, 1978, both the County Road Commission and the Midland Planning Commission admitted that they have not considered evacuation routes. As a result, the findings required by 10 CFR §50.57(a)(3)(i) and §50.57(a)(6) cannot be made.

Sinclair Contention 3 (formerly original contention 28)

Contention 3 deals with the water hammer problem of pressurized water reactors of the Midland type. This problem is identified as one of the unresolved safety issues applicable to Midland 1 & 2 in the SER, C-4. Babcock and Wilcox (B&W) plants with an internal auxiliary feedwater (AFW) feed ring of the same design as Midland in recent events, have shown a marked susceptibility to internal damage of the feed ring as a result of water hammer. From this, reduced cooling in the steam generators could occur as a result of inadequate AFW flow following loss of normal feedwater flow. (NRC Response to Interrogatory 7) Since this effect involves critical safety systems, the Task A-1 report (Jan., 1980) states that systematic review procedures in the OL review process will require the Applicant to: 1) address potential water hammer problems in various systems; 2) demonstrate that there are adequate design features and operating procedures to prevent damaging water hammer events; and 3) expand the preoperational testing program to insure that these design features and operating procedures do prevent damaging water hammer events.

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However, the SER does not indicate that these criteria have been met by the Applicant. As a result of this omission, the findings required by 10 CFR §§50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

Sinclair Contention 4 (formerly original contention 30)

The degradation of steam tube integrity due to corrosion induced wastage, cracking, reduction in tube diameter, and vibration induced cracks is a serious unresolved safety problem at the Midland nuclear plant. It is admitted that the chemistry of the cooling water is critical to prevention of steam tube failure (NUREG-0886). However, the fact that these plants depend on cooling water from the cooling pond increases the likelihood of corrosion and poor water chemistry because the DEIS states that the plant dewatering system will first be discharged to the cooling pond. (DEIS at 5-2). That means that many wastes, including radioactive materials from leaks and spills on the reactor site, can enter the cooling pond and disrupt the chemistry of the pond. Therefore, due to this contribution of an undetermined amount and quality of ground dewatering inflows to the cooling pond, the NRC's bland assurance that corrosion is unlikely due to the lack of sodium thiosulfate, is unsatisfactory. (NRC Response to Interrogatory 9.j.) In fact, due to the contribution of groundwater, the NRC is not fully aware of the likely constituents of the cooling pond, and the findings required by 10 CFR §§50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

Sinclair Contention 5 (formerly original contention 31)

Numerous non-safety related systems, the feedwater system, main steam system, makeup and purification system, non-vital electrical power systems, and the integrated control systems, can lead to Anticipated Transients Without Scram (ATWS). (NRC Response to Interrogatory 10.c) Since there have been no routine inspection and quality control standards applied to these non-safety systems, and the general quality control during construction of even safety related systems has been so poorly done (amply documented in the record of these hearings), there is an even greater probability of ATWS at Midland. However, this scenario has not been analyzed in the SER. Furthermore, B&W reactors, such as the Midland reactors, experience the largest pressure rise and thus are the most difficult to modify to achieve adequate safety margins to prevent ATWS events. (NUREG-0460, April, 1978, p. 46) Therefore, the findings required by 10 CFR §§50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

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Sinclair Contention 6 (formerly original contention 32)

There is no assurance that suitable safety margins can be maintained throughout the design life of the Midland Plant with the materials used for reactor vessel fabrication. This makes the Midland reactors unusually susceptible to reactor embrittlement and to pressurized thermal shock (PTS). For example, an investigation following the severe PTS at the Rancho Seco reactor indicated that the limiting material in the Rancho Seco reactor vessel was fabricated using the same weld wire and flux as the limiting material in the Midland reactor vessel beltline and has equivalent chemical composition and fracture toughness properties. This indicates that the Staff's conclusions concerning the Rancho Seco reactor vessel beltline materials are applicable to the Midland Unit 1 reactor vessel beltline materials. (NRC response to Interrogatory 11.e) Furthermore, a memorandum to the Midland file, dated June 14, 1977, by G. S. Keeley of Consumers Power Co. and sent to S. H. Howell, *et al.*, described a memorandum which A. J. Birkle had written to R. C. Bauman on March 22, 1977, on the status of Midland NSSS-12 reactor vessel girth weld fracture toughness. (Discovery Response, Consumers Power Co.) This memorandum pointed out that there was "a chance that the NSSS-12 reactor vessel could have a low level of fracture toughness at the operating temperature after 10 years of operation." The low level was with reference to the 50 ft-lb upper shelf criteria of 10 CFR 50, Appendix G & H. It also indicated that this could possibly be corrected by annealing the vessel which is not now a viable approach although an EPRI R&D effort is underway.

These points, as well as the fact that the Midland nuclear plants were designed over a decade ago, and contain the same defective material as the Rancho Seco nuclear plant means that findings required by 10 CFR §§50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

Sinclair Contention 7 (formerly original contention 34)

The installation of pipe supports and restraints has been deficient such that there can be no assurance that the public health and safety will be protected. In particular,

(a) There has been an inadequate examination of the use of snubbers as component supports, and there has been inadequate consideration of actual and potential snubber malfunction.

(b) Inspection Reports 50-329/82-07 and 50-330/82-07 identify extensive deficiencies in installation of pipe supports and restraints. (NRC staff response to Interrogatory 13.b, p. 4). The Applicant's response to the Inspection Report was determined to be unacceptable. (Letter, J. A.

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Mooney, to J. G. Keppler, dated August 13, 1982, file 0.4.2, Serial 17572 and letter, R. F. Warnick to J. W. Cook, dated August 30, 1982.)

As a result of these deficiencies, the findings required by 10 CFR 50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

Sinclair Contention 8 (formerly original contention 36)

Systems interaction, identified as an unresolved safety problem applicable to Midland in the SER (C-4), has special significance at Midland because the most serious accidents resulting from systems interaction failures have occurred in B&W reactors. The serious events and their special problems with systems interaction include the following:

1) The persistent operator disbelief of high temperature data from incore thermocouples and system RTD's was one major, out of many, causes for the TMI-2 accident. This disbelief was based on the rationale that the former were not safety-grade equipment while the latter were outside the calibrated range of the detectors. (NUREG-0600, p. 10, and "Daniel Ford, Three Mile Island, Thirty Minutes to Meltdown") In the case of the high temperatures, acceptance of the temperature data as valid might have prompted a higher high-pressure-injection flow rate and a reluctance to subsequently depressurize the plant to use the core flood tanks. (NUREG-0600, p. 11) This is one example of non-safety related equipment impacting on safety systems.
2) At Crystal River, an accident on February 16, 80, is of interest because of systems interaction where the integrated control system input, the PORV positioning, the instruments used for manual control of ECCS and the entire non-nuclear instrumentation (NNI) power supply depended on one 24 VDC line within the NNI power supply system. (NUREG-0667)
3) At Davis-Besse I on April 19, 1980, maintenance activities allowed an elimination of redundant power supplies that were supporting the decay heat removal function. Concurrent construction activities caused the loss of working power supply and subsequently decay heat removal was lost for over two hours. (USNRC I&E Information Notice 80-20, May 8, 1980) (NRC Response to Interrogatory 15.e)

In spite of this repeated history of systems interaction problems at B&W reactors, the staff SER specifically fails to require a comprehensive program to evaluate all systems which could interact. (SER at C-12.) Moreover, the apparent use of non-safety grade materials for safety grade functions at Midland, as specified on the listed pages of the Howard affidavit, significantly increases the risk of adverse system interactions. (Howard affidavit, pp. 11, 12, 13, 16, 17 and 18.)

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Sinclair Contention 9 (formerly original contention 40)

Contention 9 deals with lack of adequate qualification methods to satisfy the requirements for safety related equipment.

Contrary to NRC Response to Interrogatory 19(a), a Commission decision in the UCS *Petition for Emergency and Remedial Action* (CLI 81-21, May 27, 1980), 11 NRC 707, requires that all plants under licensing review must meet the equivalent of the IEEE 1974 Standard in order to satisfy GDC 4 (10 CFR 50, Appendix A). In fact, the SER admits that this standard has not been met. (SER, pp. 3-36) Thus, absent further action, the findings required by 10 CFR §§50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

Sinclair Contention 10 (formerly original contention 50)

The occupational exposure of regular workers or transient workers at the Midland nuclear plant cannot be controlled as the NRC Response to Interrogatory 29(a) states, because of the extensive quality control failures that the disclosures of Zack Co. employees and Dean Dartey indicate have been built into the heating, ventilating and air conditioning system at the Midland nuclear plant. Therefore, the findings required by 10 CFR §§50.57(a)(3)(i) and 50.57(a)(6) cannot be made.

Sinclair Contention 11 (formerly original contention 56)

There is no basis for a finding of reasonable assurance that the Midland facility can be operated safely during a loss of all AC power and resulting station blackout, for the following reasons:

1. FES 4-10 states that "ice storms are not uncommon in the vicinity of the site." Furthermore, p. 5-6 states that because of the heavy fogging from the cooling pond, "during cold weather formation of ice on elevated objects also increases." This means that the cables, power lines and other exterior safety related equipment associated with the DGB will be more likely to fail due to ice formation than would normally be expected.
2. To the extent that the Zack Co. was responsible for the design, construction and installation of the combustion air intake and exhaust systems for the DGB, these cannot be relied upon to function properly due to the well documented Zack quality control failures.

   The Staff's conclusions that the design of the combustion air intake and exhaust system is acceptable (*Ibid.* SER 3.9.3 and 9.5.8) does not take into account the extensive disclosures made about Zack's quality control breakdowns on the HVAC system provided by Albert Howard

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in July, 1982, after the SER was issued in May, 1982. (*Also see* contentions 15, 16 and 17.)

Therefore, Staff's assumptions for these statements are based on false and incomplete data, and the resolution of these items remains uncertain.

3. Two start up transformers are to provide redundant, independent sources of off site power to the 4160-VESF buses of both Units 1 and 2. While the lines for these transformers have independent rights of way, they do share a common corridor near the Midland plant (SER 8-4). This means that they could both be affected simultaneously by the heavy icing that can be expected in the vicinity of the cooling pond, according to FES 9-19.
4. In Applicant's response to Sinclair's "Discovery Question for Consumers Power Co. on New Contentions Accepted August 14, 1982" (Interrogatory I — Contention 3.a), the LER's from Palisades and Big Rock were included which were a part of the record used for the severe accident probability assessment report NUREG/CR-2497 (June, 1982), "Precursors to Potential Severe Core Damage Accidents: 1969-1979, a Status Report."

   Seven of the 9 events reported involved a loss of off site power. One event, which occurred at Big Rock, was caused by an intense winter storm — rain changing to heavy snow and ice. High winds caused lines to sway, causing what is referred to as "galloping conductors" in which line faults occurred as the lines move relative to one another. The line was de-energized for approximately two hours until repairmen, who were hampered by considerable blowing and drifting of snow, could make essential repairs.

Since all these adverse conditions that can affect the performance of the DGB and the redundant emergency power systems which must operate to prevent station blackout are present at Midland, the findings required by 10 CFR §§50.57(a)(3)(i) and 10 CFR §§50.57(a)(6) cannot be made on the basis of this information.

Sinclair Contention 12 (formerly original contention 57)

There is no basis for a finding of reasonable assurance that the electrical system at Midland will function adequately because:

1. It is vulnerable to damage by fire. In late 1975, it was learned that Bechtel — the architect-engineer for the Midland project — had tolerated cases where non-safeguard cables routed in safeguard raceways had terminated and a new non-safeguard cable (same circuit) had been continued in a different safeguard channel's raceway. So far as appears, at that time Bechtel took no corrective action to prevent recurrence of

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that problem and was unable to give positive assurances that other cables did not similarly violate the single failure criterion. Further, in September and October 1978, a fire test of a full-scale vertical cable tray array demonstrated that the configuration of fire protection features used in the test would not be acceptable for application in nuclear power plants. The final test reports of several tests conducted for the NRC fire protection research program have not yet been issued. (NRC Response to Interrogatory 36.a). There is no assurance that the same cable problems, and the same inadequate fire protection features, do not exist at Midland. There can be no reasonable assurance that the electrical system at Midland will function adequately under fire conditions.

2. According to an affidavit by an anonymous electrician at the plant, there were serious quality control lapses in the electrical systems that he installed. For example, where a cable design called for three shielded pairs of 16-gauge wire, the cable shop would use 6-stranded 16-gauge wire with the shielding around the entire bundle (Midland *Daily News*, July 28, 1982). This could result in a weaker signal than necessary through the wires, and it could contribute to the likelihood of shorting, which could disrupt service and pose a fire hazard.

Sinclair Contention 13 (formerly revised new contention 3)

The assessment of the likelihood and severity of "severe accidents" (or class 9 accidents) in the DES is inadequate in that it relies for methodology and probability of occurrence of severe accidents on the Rasmussen Report (WASH-1400) DES 5-45-66. However, a new NRC report reveals that the Rasmussen methodology, at least as it pertains to more severe accidents (total meltdown), significantly understates the risk of such accidents by a factor of 20. Precursors to Potential Severe Core Damage Accidents: 1969-1979, a Status Report, NUREG/CR-2497 (June 1982). This report shows that probabilities of severe accidents should be derived on the basis of actual accident sequences and significant events, rather than the Rasmussen methodology. The failure of the DES to incorporate this analysis cripples the entire Class 9 analysis of the DES.

Sinclair Contention 14 (formerly revised new contention 5)

The Staff DEIS is deficient in that it continues to base its analysis of the cooling pond's effectiveness in controlling thermal discharges (DEIS at 4-6) and ice and fog generation (DEIS at 5-7) on a study based on cooling pond performance in a substantially different climatic region. Instead, the DEIS should analyze information from the Dresden, Illinois nuclear facility (or other data from a comparably sized and situated facility) for both purposes, and present the baseline data from that facility to allow the agency and the public to reach an informed decision on the adverse effects of the cooling pond.

Sinclair Contention 15 (formerly revised new contention 6, as rewritten, and Stamiris revised contention 2)

NRC regulations at 10 CFR Part 50, Appendix B require that applicants for operating licenses develop and implement a quality assurance program for the protection of the public from improper materials or unworkmanlike practices. This QA program includes such elements as procurement document control, control of purchased material, equipment, and services, proper inspections and handling of nonconforming materials, corrective actions, and audits by trained personnel. However, the affidavit attached to this contention and summarized below shows clearly that the QA program for the Midland plant was not in compliance with these requirements, and that therefore, quality assurance and control cannot be established at the Midland nuclear plant.

As basis for this contention, intervenor Mary Sinclair references the affidavit of Mr. Albert T. Howard, a former Quality Assurance Documentation Supervisor for Zack Company (from October 19, 1981 through April 30, 1982), which was under contract to supply equipment for the heating, ventilating and air conditioning (HVAC) system of the Midland plant.

His affidavit documents the complete breakdown of the QA program for the Midland plant, leading to his dismissal for refusing to conform to Zack's improper QA practices. Those improper practices, with regard to the Midland plant specifically, or all of Zack's nuclear clients generally, are detailed as follows:

1. Howard states that his supervisor, Mr. Calkins, had investigated and reported the QA problems Zack was having with the Midland plant to the Midland Site Manager as early as August 28, 1981. (at 4).
2. As a result of this report, "major QA reorganizations" were undertaken at Midland, to correct improper QA documentation. *Id.*
3. Soon after Howard's promotion to Supervisor of the Documents Assurance Department, Howard became aware of "serious deficiencies" in QA documentation. (at 5).
4. On November 18, 1981, a Midland QQ (sic) contract employee directed Howard to sign a form attesting to having completed the requisite training for his position, in spite of the fact that Howard did not receive such training. *Id.*
5. On November 30, 1981, Howard reviewed reports which summarized various QA deficiencies at Midland, including such terms as:

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"certs altered"; "white out used and retyped"; and "heat number altered to agree with certification"; missing signatures; certifications missing; lack of test data for purchases; correspondence that steel had been purchased without verification and traceability; and stickers indicating compliance with professional standards. As the summary noted on the latter item, "Authenticity of the signatures is questionable." (at 6).

6. On November 30, 1981, Howard also received a report from Calkins describing the "breakdown of the quality assurance program," resulting in, *inter alia*, improper modifications to documents. *Id.*
7. The report described in ¶6 concluded that the corrective action recommended was to "promise — with a plan — not to repeat the misconduct." No "offenders" were to be dismissed. (at 7).
8. Bechtel communicated to Zack in a December 21, 1982 letter that the reported deficiencies (*see* ¶¶1, 5) were a "paperwork problem," and that it was their opinion that "It is *highly probable* that Zack ordered correct materials for the Midland project from their subtier vendors and that the vendors' intent was to comply with Zack's purchase order requirements." (emphasis added). Howard disagreed strongly with Bechtel's attempt to minimize the seriousness of the QA document breakdown at Zack. (at 9).
9. Howard states that the Zack "internal report/audit" of Bechtel's QA documentation (in ¶8) was seriously deficient in that it knowingly understated the number of purchase orders to be evaluated, and therefore that Zack's assurance to Bechtel that a "total document audit" was completed was "simply not true." (at 10).
10. Howard reports that "several times" he discussed with Zack management that "delivered materials did not conform to site specifications, and that many of Zack's vendors were unapproved as suppliers of material to nuclear sites." (at 11).
11. Howard's affidavit then states that a Mr. Perry contacted Commonwealth Edison QA manager about the deficiency in delivered materials, who then contacted Consumers Power at the Midland site. Consumers apparently then contacted the president of Zack, who informed Howard that she "did not appreciate our calls outside the company." (at 11, 12).
12. On November 5, 1980, the Bechtel Power Corporation sent a letter to the Zack Company. Howard reports that the letter "makes it clear that Bechtel Power Corporation had sufficient knowledge of material being shipped to the site in nonconforming condition." (at 14).
13. Howard states that a September, 1981 letter to the Zack Company from U.S. Steel describes a "serious misunderstanding" regarding purchases

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of steel for 26 purchase orders at all three sites (including Midland). Howard states that the letter points out that the Zack

> "confirming orders" all read "Safety-Related". The U.S. Steel letter points out that first, the orders had not been purchased as "Safety-Related"; and second, that since the purchase orders were not called in as safety-related, they were not handled through the "V&T" (Verification and Testing) program." (at 16).

Howard points out that the use of the term "Safety-Related" implied that the items received the quality verification required by regulation, which was inaccurate. *Id.*

14. Mr. Howard's affidavit states further that Zack did not confine its purchases to those from "approved" vendors.

> "Another vendor, the Delta Screw Company, also failed a fall audit. A fall 1981 Zack letter from Mr. Calkins allegedly removed Delta Screw Co. from the approved vendors list for failure to comply with the requirements of a Quality Assurance program as required by the NRC. However, I knew that Zack Company did not follow its own "approved vendors list." A list of the P.O.s from December 21, 1981 to February 1982 reveals that, in fact, Delta Screw received approximately 38 purchase orders from the Zack Company before being put back on the approved vendors list in February 1982." (at 18).

15. Howard also describes that Zack personnel were not adequately trained to perform their duties. This lack of training included the president of Zack, who "assured the utility management that all problems relating to the Zack QA/QC breakdown were under control and her personal supervision." (at 18, 19).
16. Howard's affidavit describes the notes of a meeting on November 3, 1981, at the Midland site, with all relevant QA personnel in attendance. The notes showed that the principal purpose of the meeting was to decide "whether or not to report the QA breakdown under 10 CFR 50.55(e) to the NRC." (at 19). The notes further state that Zack was to "try to get material certified to federal specification," and to "revise or clarify existing requirements so that the purchases would be acceptable." *Id.*
17. Howard describes a steadily increasing level of "intimidation and verbal abuse" from management, apparently designed to induce Howard's resignation. (at 22).
18. Howard then states that he confided in Mr. Leonard of MPQAD (at Midland) of the "awkward difficulties" with QA at Zack. (at 22). He advised Howard that he recognized Zack's "large number of problems over the years," and that he should report any specific allegations under a confidentiality agreement. *Id.*

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19. On April 13, 1982, Howard called Leonard and reported QA problems at Zack. Howard reported these allegations officially through the MPQAD allegation system on April 15. (at 23).
20. Despite Leonard's promise of confidentiality, Howard reports that "on April 16, 1982, Mr. Calkins [his supervisor at Zack] called me into his office and told me I had betrayed him and that he was not going to speak to me anymore." *Id.*
21. Soon after his visit with Calkins, Howard received a copy of a memorandum from the president of Zack to all employees. "Without mentioning me by name, this memo referred to and then denied the allegations I had made to Mr. Leonard. It also denied us access to the files without upper management permission." *Id.*
22. After a short review of the Zack files, Mr. Leonard informed Howard that he failed to find anything wrong "of substance" with the Zack QA documents. Mr. Leonard stated to Howard that "I was fired once, too, you know." (at 24).
23. On April 30, 1982, Howard was fired by the president of Zack for "incompetence." Nevertheless, she acknowledged that Zack's QA performance was "appalling." (at 24, 25).
24. On May 3, 1982, Howard reported the QA deficiencies at Zack to NRC investigators. (at 25). While he left with them documents relating "alterations," "possible forgeries," and admissions by Zack that its failure to qualify vendors was a "serious program deficiency," the NRC has not contacted Howard further until July 21, 1982 (the date of the affidavit). Although he called and visited the office several times, no interest was shown by the NRC in his revelations. (at 26).
25. CPC/NRC internal reporting systems intended to allow plant workers to raise concerns or criticisms about inadequate workmanship or practices are ineffective because they have resulted in job losses due to QA/QC reporting. (Midland *Daily News* article dated 7/20/82, 6/28/82, and Howard affidavit, 7/30/82).

Sinclair Contention 16 (formerly revised new contention 8, as rewritten)

The Zack Company of Chicago which has been the contractor responsible for the heating, cooling and ventilating system of the Midland nuclear plant has filed a non-compliance report with the NRC on or about August 4, 1982, indicating that two sets of records — a shop record and a QA record — which are required to be kept to guarantee the integrity of the welds and therefore, must be signed by the same welder, were, in fact, signed by two different persons. This violates the Federal standards for documentation for safety-related systems in a nuclear power plant. This breakdown in quality control means the principal method that the NRC has for guaranteeing the integrity of the welds in the HVAC system (which is already built into a large part of the plant) has failed and that therefore the protection of the public health and safety cannot be guaranteed as required by 10 CFR §§50.57(1), 50.57(2), 50.57(3) and Part 50, Appendix B.

Sinclair Contention 17 (formerly revised new contention 16, as rewritten)

In the Part 21 report that Zack Co. filed which was signed by Dave Calkins of Zack and prepared by Howard McGrance of Consumers Power Co., it was disclosed that 140 Travelers showed unverified welder qualifications for fabrication welds. Without qualified welders for this large number of welds, the necessary guarantee for the protection of the public health and safety cannot be met as required by 10 CFR 50.57(1), 50.57(2) and 50.57(3). In addition, this report indicates that the quality assurance in construction of these plants has not been met as required by 10 CFR Part 50, Appendix B.

Sinclair Contention 18 (formerly revised new contention 7)

The issue of synergism between chemicals and radiation must be reopened based on a new study. Scientists at Sandia National Laboratory, Albuquerque, New Mexico, have conducted tests sponsored by the NRC on polymer cable insulation and jacketing used in nuclear power containment buildings. (*Industrial Research and Development*, June, 1982) They have found that long-term low doses of gamma radiation degrades many polymers more than do equal doses administered at higher rates in shorter testing times. Besides the dose rate effect, the researchers have also found that *synergistic* effects can occur when polymers are exposed to radiation and mildly elevated temperatures. Dr. Roger Clough, of Sandia National Laboratory, has stated that the present testing method underestimates the long-term effects and synergisms that display themselves only in longer tests. This study indicates that the useful life of the plant will be shortened considerably because of this problem.

Stamiris Contention 1 (formerly new FES contention plus contentions lb and lc)

The new production-costs and cost-savings analyses of the FES, represented by revised table 2.1 (p. A-32) and the revised cost/benefit analysis (p. 6-4) and revised economic statements derived therefrom do not accurately and fully represent the cost/benefit balance of the Midland plant to the public, and should therefore not be accepted as presented, for the following reasons:

a. The cost-benefit analysis employs unrepresentative and inconsistent methodologies in deriving production cost estimates and benefits.
b. The cost-benefit analysis improperly relies on cost savings as a benefit of operations.
c. Even if the cost-benefit analysis may utilize cost savings as a benefit, the cost savings set forth in the FES are unjustified, in that they are based to too great an extent on purchased power.
d. The cost-benefit analysis improperly factors in increased construction costs in computing the benefits of the facility, and improperly relies on local taxes as a benefit.
e. The cost-benefit analysis improperly omits dewatering operating expenses as a cost of operation.
f. The cost of decommissioning in the cost-benefit analysis is understated, in that it estimates only $235 million for decommissioning while CPC estimated about $500 million for Big Rock and Palisades in 1980.
g. The cost-benefit analysis estimates about a 36-year lifespan for the facility despite the shorter life expectancy and/or derated capacity of Unit I due to its defective weld (SER, P. C-10).

Stamiris Contention 2 (formerly revised contention 6)

The NRC risk assessment in the DES and FES does not consider potential effects of permanent dewatering on groundwater relationships.

Stamiris Contention 3 (formerly revised contention 8)

The ACRS has recommended an assessment of Midland's design adequacy and construction quality in its 6/18/82 report (SER Supplement 1, Appendix G). In order to assure that this audit be thorough and objective, it must be performed by an independent third party of a competing contracting firm. Such a requirement was accepted by the Applicants in the Houston Power and Light (South Texas) OL proceeding. And, due to the pattern of design deficiencies (4/20/82 SALP, p. 16) such an independent audit is necessary to assure the design integrity of this plant. However, the NRC has not required (SER Supplement 1, p. 19-2(1)), and CPC has not committed (7/9/82 Tedesco to Cook letter) to such an independent audit.

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Cite as 16 NRC 2063 (1982) **LBP-82-119**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Dr. Glenn O. Bright

In the Matter of **Docket Nos. 50-440-OL**
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2)
December 30, 1982

The Licensing Board grants summary disposition on three issues relating to the performance of a 30 degree sector steam test, the improper consideration of local employment and tax levels in the environmental impact statement and failure to consider adequately the economic effects of serious nuclear accidents. In dismissing the 30 degree sector steam test contention, the Board also reviews the evidence and decides that it is not appropriate to raise *sua sponte* the issue of the adequacy of that test.

TECHNICAL ISSUES DISCUSSED

30 degree sector steam test
Local economic effects as a NEPA consideration
Class nine accident
Serious nuclear accident, consideration of economic effects
Test for adequacy of core spray in a BWR

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MEMORANDUM AND ORDER
(Concerning Summary Disposition)

The Staff of the Nuclear Regulatory Commission (staff) has requested summary disposition of Issues 4 (performance of a full-scale 30 degree sector steam test), 11 (the weight accorded to increased local employment and tax levels by the environmental impact statement (EIS)) and 12 (failure to consider adequately the economic effects of serious nuclear accidents in the EIS). Cleveland Electric Illuminating Company, *et al.*, (applicant) separately supports the staff position on all three issues. Ohio Citizens for Responsible Energy (OCRE) did not oppose summary disposition for Issue 12. Sunflower Alliance, Inc., *et al.*, "withdrew" issue 11. OCRE opposed summary disposition for Issue 4.

We conclude that summary disposition of all three issues should be granted. *See* our Order of December 22, 1982 (LBP-82-114, 16 NRC 1909) for a discussion of the standards applicable to summary disposition.

I. ISSUE 4

Issue #4 states:

> The safety of Applicant's emergency core cooling system has not been demonstrated with appropriate experimental data because a full-scale 30 degree sector steam test has not been performed.

Since all parties agree that a full-scale 30 degree sector steam test (test) has been performed, the Board has no alternative but to conclude that it has been performed and to summarily dismiss Issue #4. OCRE Response to NRC Staff's Motion for Summary Disposition of Issue #4 (November 14, 1982) at i, Material Fact #3. The issue admitted into this proceeding merely states that the test has not been performed. There was no issue admitted concerning the adequacy of a planned test and no basis for such a contention ever was provided. Since the test was done, there is no rational basis for retaining the contention in the hearing.

As has been our general practice, we have nevertheless examined the data before us to determine whether or not to declare a *sua sponte* issue, which we would do if there were a serious safety or environmental issue that required our exploration. This examination is presented in Part IV of this memorandum; it concludes that there is no basis for pursuing this issue *sua sponte*.

II. ISSUE #11

Issue #11 states:

> The Environmental Impact Statement (EIS) accords too much weight to increased employment and tax revenues to the local community, factors which may not be weighed directly in the cost-benefit balance.

However, the EIS was modified to cure the problem that allegedly infected the predecessor document, the Draft Environmental Statement. The modification makes it clear that indirect benefits, such as employment and tax revenues, have not been included in the cost-benefit balance. Affidavit of Brian J. Richter, attached to Staff Motion for Summary Disposition of Issues 11 and 12, at 2, ¶7. Consequently, Sunflower withdrew this contention, and summary disposition must be granted because there is no remaining genuine issue of fact. *See* Notice of Withdrawal of Issue #II (November 10, 1982).

III. ISSUE #12

Issue #12 states:

> The Final Environmental Statement for the Perry Nuclear Power Plant is deficient because it has not adequately considered the economic effects of serious nuclear accidents, using a technique similar to that used in NUREG/CR-2591.

However, Brian J. Richter, a staff economist, submitted an affidavit in support of the Staff's Motion, containing facts that have not been controverted by OCRE and that preclude any genuine issue of fact with respect to this contention. Mr. Richter states that the model used in NUREG/CR-2591, developed by the Bureau of Economic Analysis of the Department of Commerce (BEA Model), is developmental and contains some data-base problems that result in significant overestimates of costs. Richter Affidavit at 2-3, ¶¶5-6. He also states that the FES treatment of the socioeconomic impacts of serious reactor accidents is "detailed and thorough" and in compliance with the Commission's statement of interim policy, "Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969" (45 *Fed. Reg.* 40101-04, June 13, 1980). *Id.* at 5, ¶10. Additionally, he concludes from his experience with the use of the BEA model in the preparation of other recent FES's that "the addition of a BEA analysis in the Perry FES would not significantly affect the cost-benefit conclusions reached therein."

Since OCRE does not oppose the staff motion, we accept the staff's statement of material facts, supported by the Richter affidavit, as true. OCRE Response to NRC Staff's Motion for Summary Disposition of Issue #12 (December 14, 1982) at 1. Hence, we conclude that the FES treatment of accident costs is thorough and that

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there is no reason to believe that the treatment would be improved or the conclusions changed by the use of the BEA model. Summary disposition of Issue #12, must therefore be granted.

In its motion, OCRE also has asked that the EIS be amended to reflect the existence of the BEA analysis. Because staff could do that much voluntarily, we asked staff by telephone whether it would consent to that agreement. Our question was asked on December 28, 1982 and answered in the negative on December 29, 1982.

In the absence of staff agreement, the only power the Board has to alter the FES is through its adjudicative powers. Having concluded that Issue #12 must be summarily dismissed, we therefore lack the power to order any further clarification in the document, no matter how innocuous such a clarification might be. Consequently, we will not order the change suggested by OCRE.

IV. ADEQUACY OF 30 DEGREE SECTOR STEAM TEST

Based on the record before us, we see no reason to consider the adequacy of the core spray methodology to be an important safety issue that we should consider *sua sponte*. We have examined the affidavit filed with us by W. A. Sutherland, manager of the LOCA Systems Technology organization of the General Electric Corporation. Dr. Sutherland has a PhD in mechanical engineering and extensive professional experience with heat transfer and thermal-hydraulics questions. His thoughtful affidavit provides us with confidence that there is no important safety question for us to inquire into.

First, Dr. Sutherland has persuaded us that the 30 degree sector steam test is not necessary for validating convective heat transfer coefficients, as required in Section I.D.6 of Appendix K to Part 50. The validating tests are documented in APED-5529, "Core Spray and Core Flooding Heat Transfer Effectiveness in a Full-Scale Boiling Water Reactor Bundle."

Next, we are convinced that the principal effects of steam on spray distribution are due to "thermodynamic effects due to steam condensation" (occurring within 6 inches from the nozzle) and "hydrodynamic effects due to flow field interaction" (occurring beyond 6 inches from the nozzle, where the flow field of different nozzles intersects) Sutherland Affidavit at 5, ¶9. Furthermore, General Electric has devised a sound method for measuring nozzle performance in steam and simulating its characteristics with analogous nozzles performing in an air environment. *Id*. at 6. Consequently, there is reasonable assurance of nozzle performance even without tests in a steam environment.

Nevertheless, a full-scale 30 degree sector steam test was performed. *Id*. at 6, ¶12. That test confirmed applicant's predictions about the core spray distribution. *Id*. at 9-10.

OCRE questions the spray-nozzle design based on tests conducted in Japan. OCRE Statement of Material Facts at v-vi, ¶6. However, those tests are not applicable to the BWR 6 nozzles, which were designed for minimum sensitivity to condensation and are different from the nozzles tested in Japan. Sutherland Affidavit at 11.

Additionally, OCRE raised several questions about the conservatism of the 30 degree sector test or its failure to measure system performance under LOCA conditions. These questions have been answered by Dr. Sutherland, who provides reasons why the tests are conservative (*e.g.*, sparger overlap in the center two feet of the core, absence of steam in the bypass region causing less spray distribution in the adjoining area) or why certain conditions need not be considered (steam flows of greater than 20,000 lbs per hour, full core, provide adequate core cooling; two-phase froth buildup will occur at pressures of 73.5 psia and above and this froth will provide adequate core cooling).

Although applicant apparently has not addressed OCRE's material statements of fact 5.(d)-(f), we do not see any serious concern over the adequacy of the core spray distribution arising from these statements. APED-5529 merely states that "extrapolation of the results to values of these variables other than those tested must be done with caution." That statement does not address a specific deficiency in the spray distribution testing. Similarly, a finding that partially heated fuel bundles are cooled less effectively than fully heated bundles does not concern us. If the fully heated bundles are cooled effectively, then cladding overheating will not occur and there will not be any serious safety effects.

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ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 30th day of December, 1982,

ORDERED

Summary Disposition is granted with respect to issues 4, 11 and 12.

THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Glenn O. Bright
ADMINISTRATIVE JUDGE

Bethesda, Maryland

Cite as 16 NRC 2069 (1982) LBP-82-119A*

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James L. Kelley, Chairman
Glenn O. Bright
Dr. James H. Carpenter

In the Matter of

Docket Nos. 50-400-OL
50-401-OL
(ASLBP No. 82-468-01-OL)

CAROLINA POWER & LIGHT COMPANY
AND NORTH CAROLINA EASTERN
MUNICIPAL POWER AGENCY
(Shearon Harris Nuclear Power Plant,
Units 1 and 2)

September 22, 1982

MEMORANDUM AND ORDER

(Reflecting Decisions Made Following Prehearing Conference)

On July 13 and 14, 1982, the Board conducted a special prehearing conference in Raleigh, North Carolina, pursuant to 10 CFR 2.751a. The primary purpose of the conference was to consider pending petitions for intervention and contentions filed in support of those petitions. This Memorandum and Order sets forth the Board's decisions on intervention, admissibility of contentions, and related matters.

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*This opinion was inadvertently omitted from the September Issuances and therefore was not assigned a number until December 1982.

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A. Admission of Parties

Nine petitioners had originally sought intervention in this operating license proceeding: Citizens Against Nuclear Power (CANP), Conservation Council of North Carolina (CCNC), Chapel Hill Anti-Nuclear Group Effort (CHANGE), Mr. Wells Eddleman, Environmental Law Project (ELP), Kudzu Alliance (Kudzu), the Mayor's Task Force to Assess the Effect of the Shearon Harris Nuclear Power Plant on Chapel Hill (MTF), Mr. Daniel Read, and Dr. Richard Wilson. Subsequently, CHANGE and ELP sought and were granted consolidation; Mr. Read, who is also the President of CHANGE, withdrew his individual petition and permitted his interests to be represented by CHANGE. MTF also ceased to pursue intervenor status as an organization; instead, Dr. Phyllis Lotchin, the Chairman of MTF, sought intervention in her personal capacity.

These seven remaining petitioners submitted separate supplements of contentions and participated in the prehearing conference. CANP was represented by Mr. Slater Newman, a co-coordinator of that organization; CCNC was represented by Mr. John Runkle, CCNC's executive coordinator; CHANGE was represented by Mr. Daniel Read; and Kudzu was represented by counsel, Mr. Travis Payne. Mr. Eddleman, Dr. Lotchin, and Dr. Wilson represented themselves. The standing of all seven of the participating petitioners is conceded by both the Applicants and the NRC Staff. Tr. 15-16.

A petitioner for intervention is entitled to party status if he (1) establishes standing and (2) pleads at least one valid contention. As discussed hereafter, CCNC, CHANGE, Kudzu, CANP, Mr. Eddleman, and Dr. Wilson have met both tests. Accordingly, the Board orders these petitioners admitted as parties to this proceeding.

Dr. Lotchin failed to plead a valid contention at this stage. However, as discussed more fully below, the Board is deferring rulings on her contentions concerning emergency planning until after those plans, now in preparation, are available for review. At that time Dr. Lotchin's contentions, revised to take account of the plans, can be re-examined and party status may be granted.

B. Admissibility of Contentions — General Considerations

The seven petitioners filed over three hundred contentions. The Applicants or the Staff (or both) objected, at least initially, to most of these contentions. The objection most frequently voiced was that a contention lacked a basis stated with reasonable specificity. As noted below in our treatment of the individual contentions, that objection was well taken in many instances.

Section 714(b) of the Commission's Rules of Practice, 10 CFR 2.714(b), requires that "the bases for each contention [be] set forth with reasonable specificity." As explained recently by another Licensing Board, this requires that a

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contention include "a reasonably specific articulation of its rationale — *e.g.*, why the applicant's plans fall short of certain safety requirements, or will have a particular detrimental effect on the environment." *Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), LBP-82-16, 15 NRC 566, 570 (1982). The specificity requirement facilitates determination of whether a contention is litigable and puts the applicant on notice of the issues it will have to defend. *Philadelphia Electric Company, et al.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20 (1974).

The Licensing Board does not, however, reach the merits of a contention at this initial pleading stage. Accordingly, the specificity requirement does not require a petition "to detail the evidence which will be offered in support of each contention." *Mississippi Power and Light Company* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 426 (1973). If an applicant believes that it can readily disprove a contention admissible on its face, the proper course is to move for summary disposition following its admission, not to assert a lack of specific basis at the pleading stage. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542 (1980). We indicate a few instances below where the Applicants' opposition to a contention amounted to a premature defense on the merits.

Another important aspect of the specificity requirement is illustrated by the Appeal Board's recent decision in *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982). The case concerns the typical situation of an intervenor who wishes to raise contentions in areas where required documentation is not available before the first prehearing conference — most importantly, the Staff's environmental statement and the emergency plans. Prior to the *Catawba* decision, parties opposing such intervenors could and frequently did argue a literal interpretation of the rules under which *all* contentions had to be filed before the first prehearing conference, even if essential documents were not available. Many intervenors would then file necessarily vague contentions that were vulnerable to exclusion for lack of specificity. On the other hand, if the intervenors waited until the necessary documents were available — usually long after the prehearing conference — they would be vulnerable to a claim of "lateness" and possibly required to meet the five factors for late contentions listed in 10 CFR 2.714(a)(1). As both the Licensing and Appeal Boards recognized in *Catawba*, this is a classic "Catch 22" situation which the rules should not be read to require.

In order to avoid such situations, the Appeal Board has now made it clear that —

> as a matter of law a contention cannot be rejected as untimely if it (1) is wholly dependent upon the content of a particular document; (2) could not therefore be advanced with any degree of specificity (if at all) in advance of the public availability of that document; and (3) is tendered with the

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> requisite degree of promptness once the document comes into existence and is accessible for public examination. ALAB-687, 16 NRC 469.

This case has progressed contemporaneously with the *Catawba* rulings. The contentions and responses were filed prior to the Appeal Board decision and reflect the uncertainty of the law at that time. Apparently concerned that they might be required to file all their contentions now or be subject to the five lateness factors, the Intervenors filed a number of contentions attempting to anticipate deficiencies in the Staff's forthcoming impact statement and Safety Evaluation Report, and the emergency plans for the Harris facility.[1] For the most part, the Applicants and the Staff argued that rulings on these contentions would be premature and should be deferred until after the relevant documents are available. The Applicants expressed confidence that in any later "balancing" under the rule, the "absence of [necessary documents] would overwhelm the other good cause factors."[2] They further offered to stipulate that the subsequent appearance of new information in specified areas would constitute good cause for late filings in those areas.[3] The NRC Staff took a similar position.[4]

As we have seen, the Appeal Board in ALAB-687 rejected the idea of "balancing" the five lateness factors in this context. Sustaining the Licensing Board on this point, it held that contentions filed promptly after new information becomes available are timely as a matter of law. In sum, intervenors have an absolute right to file contentions on that basis, without resort to "balancing," and without the need for any stipulations from the Applicants or the Staff.

It remains for us to apply the principles of ALAB-687 to this case. If we were starting with a clean slate, we might simply extend the time for filing certain categories of contentions until necessary documentation was available (ALAB-687, 16 NRC 469). But our slate is not clean and we are now confronted with numerous contentions that, from a practical standpoint, are clearly premature. In these circumstances, we believe that deferral of rulings on these contentions until

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[1] Mr. Eddleman provided one Intervenor's perspective on this dilemma, as follows:

> Mr. Eddleman: Okay. Number 57. This is an emergency plan [contention], one that's pretty comprehensive and it was drafted under the apprehension of the *Catawba* thing. You got to remember when I wrote these things up I had no idea what position the staff and the applicants were going to take in here. I was afraid they'd be as obnoxious as the ones in *Catawba* and say that:
>
> > You can't do anything. You've got to use your x-ray vision of the future to project what's in this document, tell us exactly what's wrong with it and not only that, work voodoo on us so that we don't correct it by the time we write the thing so that you can have a contention. . . . ."
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> But at any rate, since these folks seem to be more reasonable I think the best thing to do is to defer this one until the plan comes out and let me look at it and see if I think something's wrong with it, and that's what I propose. Tr. 380.

[2] Applicants' Response to Wells Eddleman at 9-11.

[3] As we understand the Applicants, there must be a balancing of the five lateness factors under 10 CFR 2.714. But they believe they can predict in advance that the new information factor would outweigh everything else. Tr. 34. In our view, "balancing" exercises of that sort would not be productive, a consideration apparently appreciated by the Appeal Board.

[4] NRC Staff Response to Contentions at 5-11.

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necessary documents are available, as discussed at the conference, is both permissible and consistent with ALAB-687.

The following procedures are adopted for considering such contentions in this case: once the relevant document — *e.g.*, the draft impact statement or the emergency plans — is in an intervenor's hands, he or she must review the document and, within 30 days, serve a document advising the Board and parties as to which of his or her previously filed contentions are (1) submitted for ruling as they stand, or (2) withdrawn, or (3) revised on the basis of new information, including the text of the revision. At the same time, the intervenor shall submit any new contentions based on new information in the document. The Applicants and Staff shall serve any responses to the intervenor's revised or new contentions within 15 days following receipt. Thereafter, the Board will rule on their admissibility, possibly following another prehearing conference.

We conclude this general discussion with a few comments about impermissible attacks on Commission rules and petitions for waiver of a rule. The Commission adheres to the fundamental principle of administrative law that its rules are not subject to collateral attack in adjudicatory proceedings. We are rejecting (or the Intervenors have withdrawn) numerous proposed contentions which amount to attacks on the rules, notably in the areas of need for power, alternative energy sources, and financial qualifications.

Intervenors are authorized to file a petition for a waiver of a rule, pursuant to 10 CFR 2.758. However, the procedural requirements of that provision must be complied with. It is not enough merely to allege the existence of "special circumstances." Such circumstances must be set forth "with particularity." In addition, as we read the regulation, the petition should be supported by proof (in affidavit or other appropriate form) sufficient for the Licensing Board to determine whether the petitioning party has made a "*prima facie* showing" for waiver. Intervenors should be aware that as a practical matter, in most cases, a petition for waiver of a rule under section 2.758 will involve a substantial investment in time and effort.

Section 2.758 does not specify a time limit for filing a petition. However, as discussed at the hearing, any such petitions should be prepared and filed as soon as practicable. Such a petition filed inexcusably late in the proceeding would be viewed with disfavor and possibly denied on that basis alone.

C. Summary of Board Rulings on Contentions

See table on next page.

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Summary of Board Rulings on Contentions

Intervenor	Accepted	Rejected	Withdrawn or Superseded	Ruling Deferred	Total Contentions (by Intervenor)
Joint Contentions	6	1	0	0	7
Kudzu	0	1	10	4	15
CCNC	3	7	8	3	21
CHANGE	3	15	64	6	88
Wilson	7	8	0	2	17
Eddleman	18	95	22	40	175
CCNP	5	1	0	1	7
Lotchin	0	1	0	3	4
Total Contentions (by category)	42	129	104	59	334

D. Rulings on Contentions

1. Joint Contentions of Intervenors

On the first day of the prehearing conference, CHANGE, CCNC, Kudzu and Mr. Eddleman served a set of proposed Joint Contentions, which were described as combining and replacing certain of their separate contentions. The Board deferred discussion of these Joint Contentions until the following day to allow the Applicants and the NRC Staff an opportunity to review them. In addition, and with the Board's encouragement, the parties engaged in informal discussions to explore the possibility of stipulations to some of the Joint Contentions. The Board rules on the Joint Contentions as follows.

Joint Contention I concerns management capability. As revised by the parties and restated in the record (Tr. 236-237), it reads as follows:

> The applicants have not demonstrated the adequacy of their managing, engineering, operating and maintenance personnel to safely operate, maintain and manage the Shearon Harris Nuclear Power Plant as evidenced by their record of safety and performance at their other nuclear power facilities. A pattern of management inadequacies and unqualified and/or inadequate staff is likely to be reproduced at Shearon Harris Nuclear Power Plant and result in health and safety problems.

This contention was stipulated to by its Intervenor-proponents, the Applicants and the NRC Staff. Tr. 241-243. The Board finds this contention acceptable and orders it admitted.[5]

Joint Contention II concerns health effects of radiation releases accompanying normal facility operation. It alleges that the effects of such releases, within existing guidelines, have been seriously underestimated for reasons listed in six subparagraphs (a)-(f). The Applicants stipulated to this contention, except for subparagraph (d), which refers to increases in cancer mortality rates near nuclear facilities and to a publication on that subject by Dr. Ernest Sternglass. The Staff initially opposed litigation of these generic health effects issues. In a post-conference pleading, however, the Staff conceded that the contention is admissi-

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[5] This Joint Contention supersedes the following individual contentions:

CHANGE:	21, 22, 36, 37
CCNC:	21
Kudzu:	4, 5, 6, 7
Eddleman:	3, 44, 101, 106, 123, 127, 127x

These individual contentions are not "subsumed" in the Joint Contention in the sense of incorporation by reference of all of their elements. Certain of these elements may have been abandoned in exchange for the stipulation. However, they may later shed some light, if necessary, on the intended scope of the Joint Contention. *See* Tr. 327, 328.

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ble under the Commission's *Black Fox* decision,[6] if its purpose is to bring health effects into the NEPA cost/benefit analysis for the Harris facility.

The Board so reads this contention and finds it to be otherwise acceptable. The Applicants' post-conference pleading on subparagraph (d) attempts to discredit the methods and destroy the credibility of Dr. Sternglass. They argue that a Licensing Board "is entitled to make at least a threshold determination of whether a source cited as the basis for a contention has *any* credibility whatsoever."[7] Although Licensing Boards presumably could be given some authority to reach the merits of a contention at the pleading stage and reject seemingly frivolous contentions, they do not presently have such authority. *See Allens Creek, supra,* 11 NRC 542, 546-548, and cases there cited. This well-established proposition cleary implies as a corollary that Boards have no authority to reject a contention because of an alleged lack of credibility in evidence cited by the intervenor. Joint Contention II is *admitted*.[8] As discussed at the hearings (Tr. 251-256), admission of this contention is, of course, subject to the guidance for litigation laid down by the Commission in the *Black Fox* decision, including whether particular evidence was previously considered in the Appendix I rulemaking.

Joint Contentions III-VI concern radiation monitoring. There were no stipulations concerning these contentions.[9]

Joint Contention III alleges that the Applicants intend to rely on thermoluminescent dosimeters (TLDs) to measure radiation in the event of an accident. Such dosimeters are alleged to be inadequate to provide prompt and accurate information to emergency planning personnel to enable them to make decisions about sheltering or evacuation.

The Applicants and Staff oppose this contention on the ground that it attributes to TLDs a function they are not intended to perform — provision of current emergency planning data. Under the Applicants' proposal, as described in FSAR Sections 11.5 and 12.3.4, such data will be supplied by real-time effluent monitoring at all significant release points and by a mobile area monitoring capability. The contention does not allege any particular deficiencies in the described approach. This proposal is *rejected* because it does not accurately address the Applicants' proposal.

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[6] *Public Service Company of Oklahoma* (Black Fox Station, Units 1 and 2), CLI-81-31, 12 NRC 264 (1980).

[7] Applicants' Response Concerning Health Effects Contention at 7 (Aug. 10, 1982).

[8] This Contention supersedes the following individual contentions:
CHANGE: 1, 19, 57, 58, 61
Kudzu: 1
Eddleman: 37 (c), (f), (g), (h), 9, 10.

[9] For this reason, we reviewed these late-filed contentions and find that they contain no new assertions. They are merely a consolidation of timely filed contentions and we do not believe that the five factors for late-filed contentions in 10 CFR 2.714(a)(1) are applicable.

Joint Contention IV concerns the use of TLDs to monitor occupational radiation exposure. It alleges that they are inadequate for that purpose because they are inaccurate and lack real-time monitoring capability. This contention is opposed by the Applicants on the grounds that TLDs are commonly used to measure cumulative worker exposures and that pocket dosimeters are used for real-time measurements. Tr. 267, 271. If these grounds can be clearly demonstrated, this contention might eventually be a good candidate for summary disposition. For now, however, it is *admitted*.

Joint Contention V alleges that the proposed annual frequency of calibration and inspection of monitoring equipment is inadequate. It is opposed by the Applicants and Staff for lack of specificity. The Board finds this contention to be sufficiently specific; it is *admitted*. *See* Tr. 272-274.

Joint Contention VI alleges that the Shearon Harris monitoring system is inadequate because it is not capable of determining the specific types and amounts of radionuclides being released. This part of the contention is *accepted*. The contention also alleges that parts of the monitoring system are not capable of surviving an accident and are therefore inadequate. This part of the contention is not stated with sufficient specificity. Apparently, its concern is primarily with the environmental qualification of wiring and equipment, and the contention is therefore redundant of the many Eddleman contentions on those subjects (contentions for which Joint Contention VI was not proffered as a replacement). Therefore, the part of this contention alleging that components of the monitoring system will not withstand an accident is *rejected*.[10]

Joint Contention VII concerns the steam generators for the Harris facility. As revised by the parties and restated in the record (Tr. following p. 229), it reads as follows:

> Applicants have failed to demonstrate that the steam generators to be used in the Harris Plant are adequately designed and can be operated in a manner consistent with the public health and safety and ALARA exposure to maintenance personnel in light of (1) vibration problems which have developed in Westinghouse Model D-4 steam generators; (2) tube corrosion and cracking in other Westinghouse steam generators with Inconel-600 tubes and/or carbon steel support plates and AVT water chemistry; (3) present detection capability for loose metal or other foreign objects; and (4) existing tube failure analyses. This contention was stipulated to by the

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[10] The radiological monitoring Joint Contentions III-VI supersede the following individual contentions:

CHANGE:	34, 35, 65-71
Kudzu:	14, 15
Eddleman:	13, 91, 102

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Intervenor-proponents, the Applicants and the Staff. Tr. 231, 234. The Board finds this contention acceptable and orders it *admitted*.[11]

2. *Kudzu Alliance Contentions*

Kudzu 1 is *superseded* by Joint Contention II.

Kudzu 2 faults the Applicants and the Staff for failing to assess the impacts of accidents beyond the design basis of the facility. This contention is premature. Pursuant to the Commission's *Statement of Interim Policy*, 45 *Fed. Reg.* 40101 (1980), the Staff will be assessing the impacts of such accidents in its environmental impact statement. The Board's ruling on this contention, as it addresses the NEPA analysis, is *deferred*.[12] Insofar as this contention may seek to raise safety analysis questions, it is not sufficiently specific.

Kudzu 3 addresses the effects on the environment of severe accidents. Like Kudzu 2, this contention is premature and is *deferred* until after the Staff's draft environmental impact statement is available.

Kudzu 4-7 are *superseded* by Joint Contention I.

Kudzu 8-10 were *withdrawn*. Tr. 68.

Kudzu 11 concerns the financial qualifications of certain small power companies who have acquired ownership interests in the Harris plant, to operate and later to decommission the plant. This contention is barred by the Commission's recent repeal of its financial qualification requirements. 47 *Fed. Reg.* 13750, 13754 (1982). As indicated at the conference, this contention might be reinstated if court challenges to the recent rule changes are successful. Tr. 72-73. At this juncture, however, it is *rejected*.

Kudzu 12 concerns the Harris security plan, as do several contentions referred to hereafter from other Intervenors. Contentions about the security plan raise some threshold procedural issues that should be first addressed and resolved. We discussed with the parties the initial approach that was taken recently by the *Catawba* Licensing Board to such threshold issues. There was general agreement that the same approach could be followed here. Tr. 39, 73, 76, 122, 327.

The following questions are drawn from the unpublished *Catawba* Order of April 13, 1982:

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[11] This Joint Contention supersedes the following individual contentions:

CHANGE:	29-33, 74
Eddleman:	19, 112-114

[12] Because the Applicants advise us that their Environmental Report was submitted before July 1, 1980, the *Statement of Interim Policy* does not require comparable discussion in the ER of serious accidents. Applicants' Response to Wells Eddleman at 92, note 22.

1. Have you secured the services of a qualified security plan expert? If you have, submit a statement of that person's qualifications and experience to the Board and parties.
2. If you have no expert at this time, when and how do you plan to obtain one?
3. Would a protective order substantially similar to the order entered in the *Diablo Canyon* case be acceptable to you? If not, why not?

A copy of that Order was attached to the Staff's Response to Contentions dated June 22, 1982.

Kudzu, CCNC,[13] CHANGE and Mr. Eddleman shall serve their answers to the above questions by October 15, 1982. If, as indicated at the hearing, these Intervenors have decided to join forces and hire one expert (as we encourage them to do), a single set of answers will, of course, suffice. The Applicants and Staff shall within ten days following receipt of an Intervenor's statement of an expert's qualifications serve any objections they may have to such expert.

The Applicants and Staff may have objections to the Intervenors' security plan contentions, as advanced now or possibly to be developed later. As suggested by the Applicants and Staff, we need not reach those questions unless and until the Intervenors have obtained the services of a qualified security expert acceptable to the Board.

Kudzu 13 concerns emergency planning. It is *deferred* until after the emergency plans are available.

Kudzu 14 and 15 are *superseded* by Joint Contentions III-VI.

3. *CCNC Contentions*

CCNC 1 seeks in subparagraphs (a)-(f) to raise questions regarding the ownership and involvement of North Carolina Eastern Municipal Power Agency with the Harris facility. These questions do not raise litigable issues, for the following reasons:

(a) The Power Agency became a co-owner of Harris by amendment to the construction permits following the construction permit hearing. Thus the fact that its qualifications were not considered in that hearing is irrelevant.

(b) The Power Agency's financial qualifications are no longer a proper subject of inquiry under the recent amendments barring such inquiries. 10 CFR 50.33(f)(1), as recently amended. *See* 47 *Fed. Reg.* 13750 (1982).

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[13] We received a letter from Mr. Runkle on July 23, 1982 advising us that CCNC wishes to pursue security plan issues.

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(c) The Power Agency's capability to manage Harris is irrelevant because, under the Applicants' proposal, CP&L will have sole management responsibility. See Applicants' Response to CCNC Supplement at 17.

(d) Like paragraph (b), paragraph (d) seeks to raise an impermissible financial qualifications issue.

(e) and (f) That CP&L has been receiving all communications and taking all other necessary licensing actions in this proceeding merely reflects the fact that it is the lead applicant.

Contention 1 is *rejected*.

CCNC 2 concerns need for power and re-examination of the cost/benefit analysis performed at the construction permit stage. The Applicants and Staff argue that this contention is barred by the Commission's recent amendment to 10 CFR 51.53, which rules out consideration of need for power and alternative energy sources in operating license proceedings. *See* 47 *Fed. Reg.* 12940 (1982). We agree. The various parts of this contention concern either need for power or matters, such as cost of construction, that would only be relevant to alternative energy sources. This contention is *rejected*.

The last sentence of this contention states that:

> This contention, unless otherwise requested, will operate as a showing of special circumstances pursuant to 10 CFR 2.758 to exempt, among other regulations, 10 CFR 51.53(c).

The quoted sentence does not have the effect attributed to it because it does not meet the requirements of 10 CFR 2.758. Under that provision, an applicant for a waiver must make a "*prima facie* showing" of its position — *i.e.*, a persuasive evidentiary showing that application of the rule to the exceptional facts of this case would not serve the purposes for which the rule was adopted. *See* discussion at 2073, above.

CCNC 3 concerns the Harris security plan. *See* discussion at 2078-79, above.

CCNC 4 concerns spent fuel storage and transportation.[14] First, it alleges that the ER must include analysis of environmental effects associated with transportation of spent fuel from other CP&L reactors to Shearon Harris. The Applicants contend that such analysis was already performed in the licensing of those reactors, Robinson Unit 2 and Brunswick Units 1 and 2. We agree with CCNC and the Staff that the impacts of transportation of spent fuel from these reactors should be factored into the NEPA analysis in this case. Although duplicative analyses are not required, it appears that the plans to store Robinson and Brunswick spent fuel at Harris could have some previously unanalyzed impacts. This aspect of the contention is *accepted*. The Staff has expressed its intention to perform this analysis in its

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[14] We received and considered post-conference memoranda from CCNC and CHANGE, the Applicants and the Staff on spent fuel issues.

draft impact statement. CCNC should review the draft when it is available and revise or withdraw its contention, as appropriate.

CCNC argues that Table S-4, summarizing environmental impacts from transportation of fuel to and from a light-water reactor, is not applicable to the proposed arrangements for shipping spent fuel from Robinson and Brunswick to Harris and, eventually, from Harris to somewhere else. The Applicants argue that S-4 does apply, at least to provide bounding numbers. Without canvassing all of the arguments, pro and con, it is our tentative view on this legal question that the S-4 Table, or some multiple thereof, can be applied to this situation. For example, it would appear that one might reasonably double some S-4 values on the theory that the fuel from Robinson and Brunswick is spent fuel in both legs of the trip, not just one. Even under that approach, however, the resulting impacts would be small. In any event the Staff will be producing its analysis based on the facts of this case. We will reconsider this question in the light of that analysis.

Finally, the contention calls for assurances of safe storage at the end of the licensing period. Contentions of this kind are precluded by the ongoing "waste confidence" rulemaking. *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-584, 11 NRC 451, 465 (1980).

CCNC 5 and 6 were *withdrawn*. Tr. 183.

CCNC 7-9 concern emergency planning aspects covered or referred to in the Applicants' ER or FSAR. These contentions were *withdrawn* on the understanding that CCNC would have a further opportunity to file emergency plan contentions after the plans become available. Tr. 183-190.

CCNC 10 concerns collection and sharing of information about exposure of rescue personnel to radiation. The Applicants point out that their —

> health physics program is described in section 12.5 of the FSAR; in particular, section 12.5.3.6.1.3 details Applicants' methods of recording and reporting radiation exposure, including Applicants' procedures for obtaining workers' occupational exposure histories during previous employment, as well as Applicants' procedures for furnishing information about occupational exposures at Harris to the NRC.

CCNC does not identify any deficiencies in the pertinent FSAR sections. The contention is *rejected* for lack of specificity.

CCNC 11 concerns emergency planning; our ruling is *deferred*.

CCNC 12 concerns the effects on the Harris facility if the Jordan Lake Dam were to break. The Applicants' opposition goes largely to the merits of this contention. The Staff does not oppose its admission, noting, however, that the reference to the now-cancelled "Cape Fear intake facility" should be deleted. This contention is *admitted*, with the deletion the Staff suggests.

CCNC 13 was withdrawn. Tr. 197.

CCNC 14 concerns the effects of *hydrilla verticillata* (a noxious aquatic plant) on the Harris reservoir. The Applicants point to various parts of their ER,

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contending on the merits that the design features of their intake structures are such that *hydrilla verticillata* should not pose a practical problem. However, the ER apparently does not contain explicit consideration of that plant. The Staff argues that the contention is not sufficiently specific because it does not spell out just how *hydrilla verticillata* will foul the intake structures. Unlike some complex postulated reactor accidents, the concept of a water weed getting stuck in an intake structure does not require much explanation. In the circumstances of this case, we think this contention is sufficiently specific, and it is *admitted*. If *hydrilla verticillata* is the non-problem the Applicants' describe, the matter may be amenable to summary disposition.

CCNC 15 was *withdrawn* because the transmission line it concerns has been cancelled. Tr. 203.

CCNC 16-18 concern the adequacy of proposed radiological monitoring at certain fixed sample points on or near the site. They allege that more frequent and discriminating monitoring should be done in order to ensure the safety of people who might otherwise be exposed to contaminated water. These contentions are similar to Joint Contention III (discussed above) in that they inaccurately ascribe to the sample points in question a function which those points are not intended to perform. As the Applicants point out, these sample points are being established to confirm certain environmental data. The monitoring function of ensuring the safety of people near the sample points and other places will be performed by the effluent radiological monitoring and sampling system described in FSAR section 11.5. These contentions do not address the adequacy of that system. They are *rejected* because they do not accurately address the Applicants' proposal.

CCNC 19 is identical to Kudzu 2. Ruling on it is also *deferred*. *See* discussion at 2078, above.

CCNC 20 concerns decommissioning of the facility. It conflicts with the recent rulemaking on financial qualifications. The record is unclear whether this contention was withdrawn or whether it was to be denied. Tr. 209-210. Since denial is clearly warranted and does not require the proponent's consent, the contention is *denied*.

CCNC 21 is a management contention; it is *superseded* by Joint Contention I.

4. CHANGE Contentions

CHANGE 1 is *superseded* by Joint Contention II on health effects.

CHANGE 2 is identical to the first two sentences of Kudzu 2; our ruling on it is similarly *deferred*. *See* discussion of Kudzu 2, above.

CHANGE 3 appears to be an attack on 10 CFR 50.47(c), which establishes the radius for the plume exposure pathway emergency planning zone at "about 10 miles." So viewed, this contention is *rejected*.

CHANGE 4 concerns emergency planning and our ruling is *deferred*.

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CHANGE 5-7 were *withdrawn*. Tr. 296.

CHANGE 8 concerns matters to be discussed in the Staff's draft environmental impact statement. Our ruling is *deferred*.

CHANGE 9 concerns the environmental effects of spent fuel storage and is similar to CCNC 4, discussed above. This contention is *accepted*, subject to our postponement of a final decision on the applicability of Table S-4.

CHANGE 10-13, 13A and B were *withdrawn*. Tr. 297, 300.

CHANGE 14 concerns the potential impacts of unspecified "systems interactions." This contention is impermissibly vague and is *rejected* on that basis.

CHANGE 15 was *withdrawn*. Tr. 301.

CHANGE 16 concerns quality control in welding. This contention is quite vague as drafted. As discussed at the conference, CHANGE believed that it might be able to supply further particulars if it had time to discuss these matters confidentially with certain informants. The Board gave CHANGE 45 days to supply further particulars. Tr. 436, 450. However, that deadline is now long past and no particulars have been received. The contention is therefore *rejected* for lack of specificity.

CHANGE 17 and 18 were *withdrawn*. Tr. 306-07.

CHANGE 19 is *superseded* by Joint Contention II.

CHANGE 20 was *withdrawn*. Tr. 315.

CHANGE 21-22 are *superseded* by Joint Contention I on management.

CHANGE 23 was *withdrawn*. Tr. 316.

CHANGE 24 was *withdrawn*. Tr. 316.

CHANGE 25 alleges that the aircraft hazard analysis for Shearon Harris should be required, because there are "several" airports located a little more than five miles away from the plant. NRC Reg. Guide 1.70 (Rev. 3) requires an aircraft hazard analysis if there are airports within five miles of a plant, if there are airways or approaches within two miles of a plant, or if there is an airport farther than five miles from the plant whose traffic surpasses a mathematically determined level. CHANGE has not alleged that any of these triggering factors is present; nor has it alleged why the regulatory approach is inapplicable or deficient. Therefore, we find no basis for the contention. CHANGE 25 is *rejected*.

CHANGE 26 was *withdrawn*. Tr. 320.

CHANGE 27 was *withdrawn*. Tr. 320.

CHANGE 28 alleges that ultrasound methods for crack detection in the reactor vessel are inadequate. The contention is a bald statement which establishes no basis for such a conclusion, nor does it set forth any specific reasons why the ultrasound methods are not adequate. CHANGE 28 is therefore *rejected*.

CHANGE 29-33 are *superseded* by the Joint Contention VII on steam generators.

CHANGE 34 is *superseded* by Joint Contention V on radiological monitoring.

CHANGE 35 is *superseded* by Joint Contention IV on radiological monitoring.

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CHANGE 36 and 37 are *superseded* by Joint Contention I on management.

CHANGE 38 alleges that use of the S-3 table is improper because of the ruling in *Natural Resources Defense Council* v. *Nuclear Regulatory Commission*, 685 F.2d 459 (D.C. Cir. 1982). The mandate of that case, however, has not issued, and until it does, this Board must consider the S-3 rule to be in effect. CHANGE 38 is a challenge to the S-3 rule; it is therefore *rejected*.

CHANGE 39 and 40 allege that the Applicants' environmental report is inadequate because it fails to consider psychological stress. It is the position of the Commission, however, that psychological stress should not be considered absent a showing of circumstances not present here. NRC Statement of Policy on Psychological Stress (July 16, 1982). CHANGE 39 and 40 are therefore *rejected*.

CHANGE 41 concerns emergency planning. Ruling on this contention is *deferred*.

CHANGE 42 was *withdrawn*. Tr. 324.

CHANGE 43 was *withdrawn*. Tr. 324.

CHANGE 44 addresses the adequacy of the reactor's water level indicator. This contention was accepted by both Staff and Applicants, and is acceptable to the Board. Contention 44 is *accepted*.

CHANGE 45 was *withdrawn*. Tr. 324.

CHANGE 46(a)-(d) address emergency plans. Our rulings are *deferred*.

CHANGE 46(e)-(f), although dealing with emergencies, are direct attacks on 10 CFR 50.47(c)(2) and 10 CFR Part 50, Appendix E, which require a plume exposure pathway EPZ of "about 10 miles" in radius. CHANGE 46(e) and (f) are *rejected*.

CHANGE 47 through 52 on need for power were *withdrawn*. Tr. 325.

CHANGE 53 is *superseded* by Joint Contention II on health effects.

CHANGE 54 was *withdrawn*. Tr. 325.

CHANGE 55 was *withdrawn*. Tr. 325.

CHANGE 56 was *withdrawn*. Tr. 325.

CHANGE 57 through 61 are *superseded* by Joint Contention II on health effects.

CHANGE 62 through 64 on decommissioning were *withdrawn*. Tr. 326.

CHANGE 65 through 71 on radiological monitoring are *superseded* by Joint Contentions III-VI.

CHANGE 72 alleges that Applicants' environmental report is deficient in that it does not adequately consider the health effects of radon. Applicants are not required to consider the effects of radon and its decay products in their ER. 10 CFR 51.21 describes the contents of the ER and relates back to 10 CFR 51.20(e); Applicants need only include the S-3 table in their evaluation of fuel cycle emissions, and are not required (but may) evaluate the environmental significance of such emissions. CHANGE 72 is therefore *rejected*. On the other hand, the Staff is required to consider the impact of radon in its environmental impact statement. CHANGE's real concern should be with the assessment included in the FES, and

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the FES has not yet been issued. 10 CFR 51.23, n.1. By the time the FES is issued, the Appeal Board may well have issued its pending decision evaluating the health effects of radon.[15] In any event, CHANGE will have an opportunity to file contentions based on any new information contained in the impact statement.

CHANGE 73(a) was *withdrawn*. Tr. 331.

CHANGE 73(b) alleges that the environmental assessment is inadequate in that it fails to consider the health effects associated with the possible military use of plutonium derived from Shearon Harris spent fuel. Intervenor advances the military use of plutonium in spent fuel as an alternative to storage whose effects should be considered under NEPA. The NEPA requirement that anticipated environmental effects of a proposed action be described is subject to a rule of reason. *Scientists' Institute for Public Information* v. *AEC*, 481 F.2d 1079, 1091-92 (D.C. Cir. 1973). NEPA does not require discussion of "remote and speculative" alternatives whose environmental effects "cannot be readily ascertained." *NRDC* v. *Morton*, 458 F.2d 827, 837-38 (D.C. Cir. 1972). CHANGE advances no reason why we should believe that military use and resulting environmental consequences are likely; accordingly, CHANGE 73(b) is *rejected*.

CHANGE 74 is *superseded* by Joint Contention VII on steam generators.

CHANGE 75 was *withdrawn*. Tr. 332.

CHANGE 76 was *withdrawn*. Tr. 332.

CHANGE 77 was *withdrawn*. Tr. 332.

CHANGE 78(a) alleges that the cost/benefit analysis in the ER is incorrect because Applicants are basing that analysis on a 70 percent capacity factor, which allegedly is not realistic. Applicants respond that in order to comply with the new need for power rule, they will be extensively revising their cost/benefit analysis, and the new analysis will be based on a range of capacity factors. We see little point, therefore, in acting now on this contention, and accordingly *defer* our ruling until such time as Applicants amend their ER. At that time, intervenor may amend its contention to reflect the new information and format of Applicants' analysis.

CHANGE 78(b) alleges that the demand for power is overestimated in the ER. 10 CFR 51.53(c) (amended April 26, 1982, 47 *Fed. Reg.* 12940) precludes consideration of need for power in the environmental report and EIS at the operating license stage. Consequently, CHANGE 78(b) is an attack on this rule and is *rejected*.

CHANGE 79(a) addresses Applicants' ER cost/benefit information, and alleges that psychological stress should be considered as an environmental cost. We are precluded from accepting this view by the Commission's Policy Statement of July 16, 1982. CHANGE 79(a) is *rejected*. CHANGE 79(b) alleges that the costs of

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[15] The Appeal Board is including in its consideration of radon health effects the effects of radon daughters; indeed, its major concern is with the effects of the decay products. *See Philadelphia Electric Company, et al.* (Peach Bottom Atomic Power Station, Units 2 and 3), *et al.* ALAB-640, 13 NRC 487, 496 (1981).

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health effects from the fuel cycle are not taken into account. The emissions from the fuel cycle are quantified in the S-3 table, 10 CFR 51.20(e). Applicants, however, are not required to evaluate the environmental significance of the S-3 data. 10 CFR 51.20(e), 51.21. CHANGE 79(b) is *rejected* as contrary to the Commission's regulations. CHANGE 79(c) alleges that the cost/benefit analysis is deficient in failing to consider the regulatory costs to the federal and state governments. These data appear to be reasonably ascertainable — *e.g.*, the cost of the NRC's regulatory program for operating commercial reactors should be derivable from the NRC budget. CHANGE 79(c) is sufficiently specific and is *accepted*. CHANGE 79(d) alleges that the cost/benefit analysis is incorrect because it fails to consider the cost of "applicant's reliance on this unreliable source of energy." CHANGE 79(d) is simply too vague to be admitted; therefore, 79(d) is *rejected*. CHANGE 79(e) is not a contention, but rather a conclusion that is based on 79(a) through (d). Because we have rejected all but one of those contentions, 79(e) is also *rejected*.

CHANGE 80 was *withdrawn*. Tr. 333.

5. *Wilson Contentions*

Wilson 1a through 1d allege that the environmental effects of cooling tower blowdown have not been adequately considered. These contentions were accepted by both the Applicants and NRC Staff, and the Board finds them satisfactory; accordingly, these contentions are *accepted*.[16]

Wilson 1e alleges that the environmental effects of pollutants from the Cape Fear river water to be pumped into the main reservoir have not been adequately considered. The pumping station for the Cape Fear river, however, has been cancelled, and no Cape Fear river water will be used; this contention is therefore moot and is *rejected*.

Wilson 1(f1) through 1(f3) allege that Buckhorn Creek will be inadequate by itself to satisfy the water needs of the Harris facility. Staff finds this contention acceptable, while the Applicants argue that an adequate water supply is unnecessary to the safe operation of the plant. Applicants' premise is that if the water level of the reservoirs is too low, the plants will shut down. Applicants' response delves too far into the merits of the contention; moreover, Dr. Wilson's concern is focused more on the environmental consequences of an inadequate water supply than upon safety, a concern Applicants have not addressed. If Buckhorn Creek proves inadequate as a water supply, then there may be an environmental impact associated with the shortfall or the procurement of an alternative supply. Conten-

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[16] We do not limit the accepted Wilson contentions to the sentences underlined in his submission; instead, we include all the introductory and explanatory sentences accompanying the underlined sentences.

tions I(f1) through I(f3) are therefore *accepted*. Contention I(f4) alleges that the environmental effects of a Cape Fear water supply should be considered. As indicated in the preceding paragraph, such effects are too remote and speculative. I(f4) is therefore *rejected*.

Wilson I(g) alleges that inadequate treatment is given to bioaccumulation, particularly in the plant-flowers-bees-honey-man exposure pathway. Contrary to Staff's and Applicants' assertions, we find this contention sufficiently specific. This contention is *accepted*.

Wilson I(h) is not a contention. It states that Dr. Wilson's orchard business may be disrupted by an accident or just by operation of the Harris facility. There is no allegation concerning health or safety or concerning the adequacy of Staff's or Applicants' environmental assessment. We view the statement in I(h) as a statement by Dr. Wilson that he has an interest that will be affected by the Harris facility. Assuming the truth of the statement, we find no issue to litigate. Wilson I(h) is therefore *rejected*.

Wilson II concerns emergency planning; our ruling is *deferred*.

Wilson III alleges that the Harris facility cannot be operated safely because of managerial deficiencies in and the reckless attitude of CP&L. Dr. Wilson points to a record of safety violations at other CP&L plants. Applicants contended in their filing that this contention addresses the Harris Q/A program, and is deficient in detail. We reject this viewpoint. As we view it, Dr. Wilson is raising a broad management issue that has been a concern since the construction permit. Nor can we accept Staff's position in their filing that the contention is irrelevant because it addresses the safety record of other plants. A safety record at other CP&L plants is relevant evidence in evaluating managerial capabilities of the top CP&L management and the attitude of the utility toward safety. This concept is incorporated in Joint Contention I, to which both the Applicants and the Staff stipulated. Wilson III is *accepted*, subject to the probability that it will later be consolidated with Joint Contention I.

Wilson IVA alleges deficiencies in the Applicants' NEPA cost/benefit analysis. IVA(a) asserts that the analysis is deficient because "it fails to consider direct effects on the human population." This contention is simply too vague. To the extent that this contention seeks the assignment of a dollar value to effects on humans, it is without basis; no inadequacy in the present methodology is alleged, and no benefit of a more quantified approach is alleged. Moreover, Dr. Wilson's assertion that stress is a component of the effects that should be considered is contrary to the Commission's Statement of Policy on Psychological Stress (July 16, 1982).

IVA(b) alleges that Applicants are improperly comparing corporate benefits with public cost. Corporate benefit, *i.e.*, the price of electricity generated and sold, is also a measure of the value the public places on that power. On this basis, we *reject* Wilson IVA(b), which we view as a purely legal argument. However, we

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note that Applicants are required to extensively revise their cost/benefit analysis to comply with the new need for power rules. The new analysis will weigh cost savings in replaced generating capacity against the environmental costs, possibly rendering present Wilson IVA(b) moot. When Applicants' revised analysis is issued, Dr. Wilson can submit new contentions addressing its adequacy.

IVA(c) alleges that construction costs are improperly considered in the analysis. Construction costs, however, are "sunk" — that is, they have or will be expended regardless of the action of this Board. There is, therefore, no basis for considering these costs in a NEPA cost/benefit analysis that focuses on the operation of a nuclear power plant. Only the operating costs are relevant. *See Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-674, 15 NRC 1101 (1982). Wilson IVA(c) is *rejected*.

IVA(d) alleges that the Applicants' decommissioning cost estimates are inaccurate because of the uncertainties in these costs. We recognize that there are uncertainties; these costs will not be incurred for 40 years. However, decommissioning criteria are at present the subject of generic rulemaking, and the rule will be accompanied by a generic environmental impact statement. *See* NUREG-0586 (January 1981). In view of this rulemaking by the Commission, it would be inappropriate for us to accept Wilson IVA(d). In addition, IVA(d) is too vague; it does not indicate how or why Applicants' estimates are inferior to other estimates. Wilson IVA(a-d) is therefore *rejected*.

Wilson IVB alleges that the control room design will be inadequate because of human engineering discrepancies. This contention is extremely vague and cannot be accepted in its present form. As the contention points out, however, the control room will soon be the subject of a design review by the Essex Co. This report, when it is issued, will presumably include new material, and Dr. Wilson will be permitted to file new or amended contentions. Our ruling on this contention is *deferred*.

Wilson IVC alleges that the preoperational radiological survey will be inadequate because of difficulty in measuring toxicity of small quantities of certain radioisotopes, the heterogeneous distribution of man-made isotopes in the environment and the insufficiency of the number of sampling points. The contention, however, does not address Applicants' preoperational radiological survey, whose adequacy was litigated in the construction permit proceedings. *Carolina Power & Light Company* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), LBP-78-4, 7 NRC 92, 122 (1978). It does not particularize how the proposed scheme should be changed; nor does it indicate how the alleged inadequacies adversely affect either public health and safety or the environmental analysis. Wilson IVC is *rejected* for failing to state a basis with the requisite specificity.

Wilson IVD alleges that new information on unexpected supercriticality has not been taken into account in Applicants' criticality safety analysis (FSAR Section

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4.3.2.6). The contention cites a recent (1980) article in *Nuclear Technology* as a basis for the allegation. The conclusions reached in the article, which shows mathematically that changing the geometry of the fuel storage from an overmoderated state to one of optimum moderation increases the reactivity of the system, are neither new nor unknown. The contention does not establish a nexus between the cited article and the requirements of General Design Criterion 62 and NRC Regulatory Guide 1.13, with which standards the criticality analysis complies, nor does it set forth with any specificity just what effect upon the health and safety of the public such supercriticality would have. The contention lacks the required basis and specificity, and is *rejected*.

6. Eddleman Contentions

We have a few preliminary comments before discussing Mr. Eddleman's individual contentions. Mr. Eddleman submitted a number of legal arguments and requests for Board action interspersed among the contentions in his 250 page Supplement. Some of these arguments and requests might be viewed as motions. Because the Board is now concerned only with determining the parties and their contentions, almost all of these arguments were premature. Moreover, except for simple matters that can be heard orally on the record, formal motions must be submitted in accordance with the Commission's Rules of Practice, 10 CFR 2.730. Therefore, to the extent that the legal arguments and requests in the Eddleman submission might be viewed as motions, they are denied. Mr. Eddleman may, of course, submit new motions if they comply with our procedural regulations and address issues that are ripe for consideration.

In many of his contentions Mr. Eddleman seeks to incorporate other contentions by reference. Contentions should be clear and direct statements that do not depend for coherence upon references to other statements. We have examined some referenced contentions to interpret the meaning of some other contentions, but we have not felt bound to do so. Moreover, our acceptance of a particular contention does not constitute acceptance of any other contentions it may purport to incorporate by reference.

Finally, Mr. Eddleman's submission contains a very lengthy definitional section which he asks us to apply to certain words in his contentions. The definitions are, in the main, open-ended lists that could effect a marked expansion in the plain meanings of the defined terms, or deprive them of any clear meaning. These definitions are apparently designed to serve some of the same purposes as incorporation by reference, especially to ensure that every conceivable problem attributable to the Applicants' facility has been duly attributed. Application of these definitions was unworkable. Many of the elements in these definitions did not apply to particular contentions, and the definitions (where we looked at them) did not produce greater specificity. Accordingly, we have not adopted Mr.

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Eddleman's definitions; instead we have applied the plain meanings of the terms in his contentions.

Eddleman 1 alleges that Applicants should replace their thermoluminescent dosimeters (TLDs) offsite with real-time radiation monitors capable of reading gamma, beta, and alpha radiation. The contention is basically the same as Joint Contention III, and the same criticism applies to each. TLDs are not used for the function Mr. Eddleman assigns to them. Because the contention does not accurately address Applicants' proposals, it is *rejected*.

Mr. Eddleman also submitted a proposed amendment to Eddleman 1 at the prehearing conference. This amendment, however, to the extent it differs from the original contention, is redundant of the Joint Contentions on radiological monitoring (particularly, Joint Contention VI). Accordingly, Eddleman 1 amendment is *rejected*.

Eddleman 2 alleges the need for pressurized ionization monitors at all discharge points, including the main stack, at the Harris plant. The monitors should be capable of determining the precise type and amount of radionuclide being emitted, and should have both high and low range capability. This contention is sufficiently specific, but it is redundant of Joint Contention VI, and is *rejected*.

Eddleman 2 also alleges that all towns and cities within 30 miles of the plant should have such monitors. This part is an emergency planning contention and is premature. Accordingly, it is *deferred*.

Eddleman 3 was *superseded* by Joint Contention I on management.

Eddleman 4 alleges the inadequacy of safety analysis limited to single failures. 10 CFR Part 50, Appendix A, however, establishes design criteria for nuclear plants and directs the use of a single failure approach. This contention is therefore an attack on the Commission's regulations. Even if it were not, Eddleman 4 would be too vague to be accepted. Eddleman 4 is *rejected*.

Eddleman 5 and 6 allege the unlawfulness of nuclear power under various theories; such argumentative statements do not qualify as contentions and, in any event, are beyond the scope of this proceeding. Eddleman 5 and 6 are *rejected*.

Eddleman 7 alleges the need for a comprehensive failure modes analysis. This contention is too vague. Applicants' design presumably complies with the design criteria in 10 CFR Part 50, Appendix A. The plant is designed against single failure (which includes any multiple failure resulting from a single occurrence); underlying the single failure approach is the premise that plants are designed to minimize systems interactions. Eddleman 7 would have Applicants redo all the engineering analysis which formed the basis for the Shearon Harris plant. We cannot accept such a broad contention, advanced without basis. The contention fails to identify specific problems or particular systems that might interact, and to postulate the possible consequences as a basis. Eddleman 7 is *rejected*.

Eddleman 8(a) alleges the inadequacy of an environmental analysis using the S-3 table emissions, 10 CFR 50.20(e), and cites *NRDC* v. *NRC*, 685 F.2d 459

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(D.C. Cir. 1982). As discussed at CHANGE 38, *supra*, the S-3 table must be treated as in effect. This contention is therefore an attack on the rules and is *rejected*. Eddleman 8(b) and the rest of the contention assert that the health effects of the S-3 releases are inadequately assessed. No assessment, however, is required until the NRC Staff issues its draft EIS. *See* 10 CFR 51.20(e), 51.21, and 51.23(c). At that time a specific contention may be submitted.

Eddleman 9 alleges that Applicants have not shown compliance with the NRC's regulations on environmental qualification of electrical equipment and that Applicants' equipment does not meet those standards. Applicants admit that they have not yet amended their FSAR to show compliance with NUREG-0588, which was adopted by the Commission in *Petition for Emergency and Remedial Action*, CLI-80-21, 11 NRC 705 (1980) as the standards meeting General Design Criteria of 10 CFR Part 50, Appendix A. Applicants assert, however, that this will be done as a matter of course, and therefore suggest that the contention be dismissed. We find this approach unpersuasive. Applicants have admitted a deficiency in their FSAR and do not reply that their equipment in fact meets the appropriate standards. If and when that deficiency is corrected, Applicants may move for partial summary disposition on this contention. We therefore *accept* that portion of Eddleman 9 that alleges a deficiency in the FSAR. We do not accept the part of the contention that Applicants' equipment is not environmentally qualified. This part of the contention is not sufficiently specific. After Applicants amend their FSAR to reflect the qualification of their equipment, Mr. Eddleman can submit contentions of any specific inadequacies in qualification or noncompliance with the regulations based on that new material.

Eddleman 10 alleges that many of the references in the FSAR predate 1975 and are therefore obsolete. If the design of a safety system is based on erroneous information, then the contention should address that safety system. Similarly, if an environmental assessment is incorrect because it relies on outdated material, then the contention should address the environmental assessment. We cannot, however, examine the currency of reference material *in vacuo;* without a connection to a particular health and safety or environmental issue, it has no relevancy. Eddleman 10 is *rejected* for vagueness and lack of basis.

Eddleman 11 alleges that the safety and environmental assessments do not adequately consider the accelerated deterioration of polyvinyl chloride (PVC) and polyethylene insulators when subjected to radiation. PVC is not used in the Shearon Harris plant; therefore the part of this contention that addresses PVC is rejected as not addressing Applicants' proposal. The Shearon Harris plant will use polyethylene. Applicants respond that the safety-related cable bearing polyethylene insulation has been tested in accordance with IEEE 323 (1974), as required by NUREG-0588 and the Commission's order, CLI-80-21. This response addresses the merits of the contention, and not whether it has a basis stated with reasonable specificity. As such, it should be raised later as a motion for partial

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summary disposition, to which intervenor will be given an opportunity to reply. Eddleman 11, to the extent it addresses polyethylene, is *accepted*.

Eddleman 12 alleges that the environmental analyses do not include the environmental effect of ocean dumping of low level wastes. There is no indication that ocean dumping is contemplated, or that it is a probable consequence. As discussed at CHANGE 73(b), *supra*, a rule of reason applies in determining what environmental impacts should be considered. Mr. Eddleman has advanced no basis for considering ocean dumping. Eddleman 12 is therefore *rejected*.

Eddleman 13 was *superseded* by Joint Contention III-VI on radiological monitoring.

Eddleman 14 alleges that the NEPA cost/benefit analysis is deficient because it fails to take into account the price elasticity of demand. The contention alleges that the price increases associated with the capital costs of the Shearon Harris plants will result in decreased demand to the extent that the Shearon Harris plants are no longer needed. This contention is therefore inadmissible as an attack on the rules; 10 CFR 51.21 precludes discussion of need for power. If demand does decrease, we are to assume that nuclear plants would still be used to replace other less economical generating capacity. *See* 46 *Fed. Reg.* at 39440-41 (1981). Eddleman 14 is *rejected*.

Eddleman 15 alleges that the construction cost estimates in the environmental report are outdated and inaccurate. As stated in our discussion of Wilson IVA(c), construction costs are deemed to be "sunk" and will not be considered in this operating license proceeding. The contention, as it addresses construction costs, is *rejected*. Eddleman 15 also alleges that the ER cost/benefit analysis is deficient because it does not properly consider the costs associated with the health effects of operation, the costs associated with the health effects of the fuel cycle, and the costs of waste disposal. The costs associated with the health effects of operation are the subject of Joint Contention II, which has been accepted and to which Mr. Eddleman subscribes. This part of the contention is therefore redundant and is *rejected*. The costs associated with the health effects of the nuclear fuel cycle need not be included in Applicants' Environmental Report; that report requires only the inclusion of the S-3 table and makes discussion of the environmental significance optional. 10 CFR 51.20(e). Moreover, this part of the contention offers no specifics, is therefore fatally vague, and is *rejected*. There remains Mr. Eddleman's contention that the costs of waste disposal are understated. Waste disposal is part of the fuel cycle. To the extent this subpart of the contention addresses environmental costs of waste disposal, it is *rejected* for the reasons given in our discussion of fuel cycle health costs above. The contention also raises, however, the economic costs of waste disposal, and Applicants' answer goes to the merits. Therefore, we admit the contention that the economic costs of waste disposal are understated. If Applicants disagree with the contention's conclusion, then their proper course is to seek summary disposition of the issue.

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Finally, Eddleman 15 attacks the benefit estimates in the ER; in particular, the contention alleges that the full output of Shearon Harris will not be salable and that the lifetime DER capacity of the Shearon Harris plant is overstated, in large part due to the problems associated with steam generators. The salability of the Harris plant's output is clearly precluded by the need for power rule. *See* discussion of Wilson IVA(c), *supra*. As to the remainder of the contention which addresses capacity factors, Applicants answer that they will amend their analysis to show the differential savings at a range of capacity factors. When Applicants amend their ER, this subpart of Eddleman 15 may be mooted, although new contentions may be submitted based on the new information. Until then, however, this subpart is *accepted* — it is specific, has basis, and Applicants have practically admitted to the need for an analysis which considers other capacity factors.

Eddleman 16 asserts that construction should be halted because a cost/benefit analysis demonstrates that Shearon Harris is uneconomical. We have no power to halt construction. This issue was pertinent to the construction permit proceedings, and is beyond the scope of the operating license proceedings. This contention is *rejected*.

Eddleman 17 alleges that the cost/benefit analysis fails to take into account the rising construction costs. As discussed for Wilson IVA(c), above, construction costs are sunk and will not be examined in these operating license proceedings. Eddleman 17 is *rejected*.

Eddleman 18 and 19 are *superseded* by Joint Contention VII on steam generators.

Eddleman 20 alleges that Shearon Harris Unit 2 will not in fact be built because of declining demand and rising costs and that the environmental cost/benefit analysis should reflect this fact. This contention cannot be admitted. It challenges the need for power rule (*see* discussion of CCNC 2, *supra*), and raises construction costs, which are not relevant at this stage of the proceeding. *See* discussion of Wilson IVA(c), *supra*. Eddleman 20 is *rejected*.

Eddleman 21 alleges that terminating construction would result in cost savings. This is the base alternative in a construction permit proceeding, but it is clearly outside the scope of an operating license proceeding. We have no jurisdiction to relitigate the issuance of a construction permit and stop construction. Eddleman 21 is *rejected*.

Eddleman 22 alleges further deficiencies in the ER's cost/benefit analysis. Subpart A alleges that the fuel cost estimates are too low. Applicants respond that because other parts of Eddleman 22 address construction costs, the entire contention should be rejected. We do not agree; the parts of the contention that relate to operating costs are admissible if they otherwise meet the specificity and basis requirements, which they do. Eddleman 22(A) is *accepted*.

Eddleman 22(B) alleges that the construction and operation payrolls are in error. As discussed for Wilson IVA(c), *supra*, construction costs, and hence the con-

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struction payroll, are not relevant to this proceeding. As stated above, however, operating costs contentions are admissible. Eddleman 22(B) is *accepted*, but is limited to the operating payroll and its effect on the cost/benefit analysis.

Eddleman 22(C) alleges that the ER's cost/benefit analysis demonstrates a net loss. The ER is not the FES, though it is used by the NRC Staff in completing the FES. To the extent that the ER provides specific information that may be in error and that will be incorporated into the FES, present concern with the ER is justified. As to the conclusion whether the benefits of a federal action justify the environmental costs, only the FES is relevant. Eddleman 22(C) is *rejected*.

Eddleman 22(D) is not a contention and is *rejected*.

Eddleman 22(E) raises construction cost issues and is *rejected*.

Eddleman 23(A) alleges that Harris power will not be needed until three years after the proposed operation date. This contention is an attack on the new need for power rule and is *rejected*.

Eddleman 23(B) alleges that the ER fails to update the environmental analysis from the construction permit proceedings, as required by 10 CFR 51.21. The contention lists areas of concern, *i.e.*, radiological monitoring, waste disposal costs, health effects of radiation, operating costs, etc. Each of these areas is the subject of at least one other Eddleman contention; therefore, this contention is redundant. Moreover, as a catchall contention, it lacks specificity and in reality offers only a legal conclusion to be reached on the basis of other contentions. Eddleman 23(B) is *rejected*.

Eddleman 24 concerns terrorist attacks on shipments of spent fuel from Robinson and Brunswick to Harris. It postulates a variety of attack scenarios. Those which postulate use of heavy military weapons are barred by 10 CFR 50.13. *See* discussion of Eddleman 52, below. Those which postulate attacks with conventional weapons are, in substance if not in terms, attacks on the adequacy of the Applicants' security plans for such shipments. *See* 10 CFR 73.37. Such plans are required to be kept secret. 10 CFR 73.21(b)(2). This contention shall be treated like the other security plan contentions, as discussed at Kudzu 12, *supra*. After a qualified expert has been found to examine the transportation plan for Mr. Eddleman, we will reach any questions about the contention, including whether it may be an attack on the rules or whether it lacks sufficient specificity. Until then, our ruling is *deferred*.

Eddleman 25 is linked to Eddleman 24 in that it postulates the same terrorist attacks and then argues that various alternatives should be considered under NEPA in the environmental statement, including re-racking and saving all the spent fuel for transportation in a single train when the license expires. Our ruling on this contention is also *deferred*, pending both the availability of the draft impact statement and pending at least some further consideration of Eddleman 24. If Eddleman 24 is ruled out, the premise for this contention may be removed.

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Eddleman 26 postulates a terrorist attack on the facility, including among its objectives the spent fuel pool. This is an attack on the facility security plan and shall be treated like other such contentions. *See* discussion of Kudzu 12, above.

Eddleman 27 is redundant of the three preceding contentions, in part. It also alleges deficiencies in the environmental statement because it does not consider the "sociological impacts of . . . terrorism and the threat of it on the public." Guided by the Commission's recent Statement of Policy on Psychological Stress, we do not believe that such ephemeral matters need to be factored into the Staff's NEPA analysis. Although this ruling could have been deferred to await the impact statement, we think the right answer is clear at this point. We *reject* this contention.

Eddleman 28, like 27, is a catchall contention incorporating bits and pieces of the preceding four contentions. As such, it adds nothing. It also alleges that the applications for transport and storage are overly broad and vague. As the Applicants explain, it is not possible for various reasons to specify exact numbers of fuel assemblies that may be involved. But there is a bounding limit in the capacity of the spent fuel pool. In the absence of some more specific criticism of the applications, this contention is *denied*.

Eddleman 29 and 30 assert that the releases and effects of radioiodines have been underestimated and that monitoring of and protective measures against radioiodine releases are inadequate. 10 CFR Part 50, Appendix I, Section I.C establishes permissible releases of radioiodines; if an Applicant meets this standard, operation of the plant is not deemed inimical to the public health and safety. To avoid a collateral attack on the Appendix I rule, these contentions must therefore be limited to the environmental analysis of the health effects of radioiodines. However, Joint Contention II addresses the health effects of radionuclide emissions. Therefore this aspect of the contention is redundant and is *rejected*. The contentions, however, also allege that releases will exceed the Appendix I releases; if proved, this would present a serious safety concern; accordingly, this part of the contention is *accepted*. The portions of the contention that address the ability of radiological monitors to identify radioiodines, 29(E) and (H), we find to be redundant of the Joint Contentions on radiological monitoring; these subparts are *rejected*. The portions of the contention that address providing potassium iodine pills to the public, 29(D) and 30, seek to raise emergency planning issues. Rulings on them are *deferred*.

Eddleman 31 alleges that the NRC Staff is incapable of carrying out its responsibilities. The Staff's capabilities are not on trial. This contention is *rejected*.

Eddleman 32 concerns emergency planning; ruling thereon is *deferred*.

Eddleman 33 is a request for intervenor funding and not a contention. This Board has no authority to approve intervenor funding; it is, in fact, proscribed by

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law. Pub. L. No. 97-88, §502, 95 Stat. 1135 (1981). Therefore Eddleman 33 is *rejected*.

Eddleman 34 alleges the SER and FES for Shearon Harris are inadequate because they do not adequately consider terrorist attacks and sabotage. 10 CFR 50.13 provides in effect that consideration of terrorist activity is not required in plant design; hence, Eddleman 34 cannot raise this issue. Eddleman 34 may raise an issue as to the adequacy of the security plan; this contention, however, is redundant to contention 35 and is therefore *rejected*. Applicants argue that 10 CFR 50.13 also precludes NEPA consideration of the effects of terrorism. We do not find that the cases cited by Applicants support this proposition. The FES, however, has not yet been issued; we find the environmental portion of this contention to be premature and *defer* ruling on it. We do not reach any conclusion now whether under the rule of reason the possible impact of terrorism must be considered in an environmental impact statement. *See* discussion of CHANGE 73(b), *supra*.

Eddleman 35 concerns the security plan. *See* discussion of Kudzu 12, above.

Eddleman 36 alleges that the SER and FES do not adequately consider "Class IX" accidents. 10 CFR Part 50, Appendix A establishes design criteria; a reactor's safety systems need only be designed against "design basis" accidents. Alleging that consideration should be given to accidents that exceed the design basis is an attack on the rule, unless the contention details a credible scenario which applies to the specific facility. That part of the contention, therefore, that addresses the adequacy of the SER is inadmissible. The NRC Staff is required to consider accidents exceeding design basis in its FES. The FES, however, is not yet prepared. This portion of Eddleman 36 is therefore premature, and we will *defer* ruling until the Staff issues the draft FES.

Eddleman 37. Parts (c)(f)(g) and (h)(9) and (10) of this contention have been withdrawn and were *superseded* by Joint Contention II on health effects. Eddleman 37(a) alleges that consideration should be given to psychological stress. Pursuant to recent Commission guidance on consideration of psychological stress, this contention is *rejected*. *See* Statement of Policy on Psychological Stress Issues, *supra*, (July 16, 1982). Part (b) alleges that certain health effects other than cancer are underestimated. Applicants respond that this contention is inadequate because it fails to aver evidence. Applicants misread *Black Fox, supra;* Intervenor need only aver evidence in response to a motion for summary disposition. Part (b) is therefore *admitted*. Parts (d) and (e) are statements regarding the credibility of studies for and against the health effects issue; as such, they do not raise a contention, but merely discuss material which may or may not be introduced into evidence. Part (i) alleges that the costs of future deaths should not be discounted to present value. The assertion in part (i) is not presented in any context — we cannot tell if Mr. Eddleman is alleging an inadequacy in the ER or anticipating an inadequacy in the FES; this contention is fatally vague. Parts (d), (e), and (i) are *rejected*.

Eddleman 38 and 39 allege that operation of Shearon Harris would result in violations of the antitrust laws. These contentions exceed the scope of our jurisdiction. *See Florida Power & Light Company* (St. Lucie Plant, Unit No. 2), ALAB-661, 14 NRC 1117, 1123 n.15 (1981). Eddleman 38 and 39 are *rejected*.

Eddleman 40 broadly exhorts this Board to exercise its authority to raise issues *sua sponte*. *See* 10 CFR 2.760a. It is not a contention and is *rejected*. As an exhortation to this Board, it is unnecessary.

Eddleman 41 alleges that Applicants' QA/QC program fails to assure proper inspection of safety-related equipment. Mr. Eddleman alleges that defective pipe hanger welds are being approved, in part because CP&L inspectors cannot read blueprints. We *reject* a contention that would address the entire QA/QC program; such a contention is overbroad and vague, and Mr. Eddleman has not presented sufficient basis to support an examination of the program in general. We *accept*, however, a contention that addresses what appears to be Mr. Eddleman's specific concern — that there exist defective hanger welds that have been improperly inspected and approved.

Eddleman 42 alleges that Applicants' training program is deficient because the control room instrumentation does not provide sufficiently detailed information to permit the operators to make the appropriate response. We find the connection between the training program and the control room design to be extremely tenuous. To the expert there is a connection, it is addressed by Eddleman 132, which concerns control room analysis and which has been accepted. The specific concern raised by Eddleman 42, the absence of a failure modes and effects analysis, is also redundant (of Eddleman 7 which was rejected). Eddleman 42 is therefore *rejected*.

Eddleman 43 alleges that CP&L's management is deficient because CP&L has not yet environmentally qualified its equipment. Management is the central issue in Joint Contention I. Therefore, Eddleman 43 is redundant; the argument in support of the contention, that noncompliance with regulatory requirements shows lack of management capability, does not set this apart from Joint Contention I. Eddleman 43 is *rejected*.

Eddleman 44 was *superseded* by Joint Contention I on management.

Eddleman 45 alleges that the Harris design is unsafe because it is outdated. This generalized expression of concern is far too broad and vague to be accepted. However, Mr. Eddleman offers some specifics with regard to the "water hammer" phenomenon. Accordingly, the portion of Eddleman 45 that alleges a safety problem because the feedwater, ECCS, main steam system, and their components are not properly designed, constructed and tested against water hammer is *accepted*.[17]

Eddleman 46 on neutron shield embrittlement was *withdrawn*. Tr. 376.

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[17] We are not accepting all of Eddleman 45 verbatim; it contains much extraneous and vague language.

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Eddleman 47 on fast fracture was *withdrawn*. Tr. 377.

Eddleman 48 and 49 allege that the inspection plan for Harris is inadequate because there are no adequate means for detecting cracks in the coolant piping, reactor vessels, and their welds. Mr. Eddleman alleges that the undetected cracks could result in fast fracture. Both Eddleman 48 and Eddleman 49 reference Eddleman 47 as a basis for anticipating fast fracture. Contention 47, however, was *withdrawn*. Mr. Eddleman indicated at the prehearing conference that he was satisfied that the vanadium, copper and phosphorous content in the base metal and welds were at levels that would avoid embrittlement and fast fracture. Tr. 377. Since Mr. Eddleman has withdrawn the basis for Eddleman 48 and 49, these contentions are also considered *withdrawn* or, in the alternative, rejected.

Eddleman 50 asserts that construction of Shearon Harris should be halted because there may be cracks in the reactor vessels that could result in fast fracture. Both because Mr. Eddleman has withdrawn his basis for concern about fast fracture and because this Board has no authority to halt construction, Eddleman 50 is *rejected*.

Eddleman 51 on metal testing was *withdrawn*. Tr. 432.

Eddleman 52 alleges that the safety analysis is deficient because it does not consider the "consequences of terrorists commandeering a very large airplane . . . and diving it into the containment." This part of this contention is barred by 10 CFR 50.13. This rule must be read *in pari materia* with 10 CFR 73.1(a)(1), which describes the "design basis threat" against which commercial power reactors *are* required to be protected. Under that provision, a plant's security plan must be designed to cope with a violent external assault by "several persons," equipped with light, portable weapons, such as hand-held automatic weapons, explosives, incapacitating agents, and the like. Read in the light of section 73.1, the principal thrust of section 50.13 is that military style attacks with heavier weapons are not a part of the design basis threat for commercial reactors. Reactors could not be effectively protected against such attacks without turning them into virtually impregnable fortresses at much higher cost. Thus Applicants are not required to design against such things as artillery bombardments, missiles with nuclear warheads, or kamikaze dives by large airplanes, despite the fact that such attacks would damage and may well destroy a commercial reactor. This part of the contention is *rejected*.

This contention also alleges that a large airplane might accidentally crash into the reactor in a thick fog or heavy cloud cover. It suggests that the location and plans for expansion of the Raleigh-Durham airport make such accidents a greater concern for the Harris plant than for other nuclear plants. The NRC Staff applied specific criteria to determine whether an aircraft hazard analysis should be required in a particular case. *See* NRC Regulatory Guide 1.70 (Rev. 3). According to the FSAR (sections 2.2.5 and 3.5.1.6), the airports and aircraft traffic in the area do not meet those criteria. The contention does not indicate specific defects in the

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Staff criteria or in the FSAR description of the pertinent factors. Accordingly, this aspect of the contention is *rejected* for lack of specificity.

Eddleman 53 hypothesizes attacks on the Harris plant by "terrorists, saboteurs and hostile nations" having access to various types of non-nuclear military equipment. This contention conflicts with 10 CFR 50.13; it is *rejected*.

Eddleman 54 (lst) discusses at length variations on a basic scenario in which a terrorist group (*e.g.*, the PLO, the Red Brigades) attacks the Harris plant with thermonuclear weapons. This contention also conflicts with 10 CFR 50.13; it is also *rejected*.

Eddleman 54 (2d) has two aspects. It consists, in part of further postulation of terrorist military attacks against the Harris facility. This aspect is barred by 10 CFR 50.13. In addition, the contention seeks to raise questions about the Harris security plan. For example, subpart G deals with the possibility of smuggling explosives into the site. *See* discussion of security plan contentions of Kudzu 12, above.

Eddleman 55 postulates that "a deranged fighter plane pilot might fire on the Harris plant with air-to-ground missiles." This contention is barred by 10 CFR 50.13. In addition, we are making a judgmental determination that the postulated risk is too remote to warrant consideration. This contention is *rejected*.

Eddleman 56 and 57 allege deficiencies in emergency plans for the Harris plant that do not yet exist. These contentions are *deferred*, a course in which Mr. Eddleman concurs. Tr. 380.

Eddleman 58 (lst) is a rambling, three-page collection of words and phrases concerning the Applicants' analyses of accidents and various other topics, some of which are treated in other contentions. We were unable to extract any meaningful contention from this material. It does not approach minimal standards of specificity and is *rejected* for that reason.

Eddleman 58 (2d) concerns financial qualifications of small owners. It is barred by 10 CFR 2.104, as amended, 47 *Fed. Reg.* 13750 (1982), and is therefore *rejected*.

Eddleman 59 and 60 concern need for power and alternative energy sources. They are barred by 10 CFR 51.53 and are therefore *rejected*.

Eddleman 61A alleges that the health effects of radon emissions during the fuel cycle have not been adequately assessed. This issue is presently before the Appeal Board. *See Philadelphia Electric Company, et al.* (Peach Bottom Atomic Power Station, Units 2 and 3), *et al.*, ALAB-480, 7 NRC 796 (1978); *Philadelphia Electric Company, et al.* (Peach Bottom Atomic Power Station, Units 2 and 3) *et al.*, ALAB-640, 13 NRC 487 (1981). Moreover, assessment of radon health effects in this operating license proceeding is not required until the Staff issues its draft EIS. *See* 10 CFR 51.20(e), 51.21, and 51.23(c). Accordingly, Eddleman 61A is premature and cannot address with specificity the assessment that will be in the FES, an assessment that may well be made after the Appeal Board's resolution of the issue. Eddleman 61A is *deferred*.

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Eddleman 61B alleges that the long-term health effects of radon and the radionuclides in the S-3 table have been improperly assessed. The allegation, as it addresses radon, is redundant of 61A and is *rejected*. The allegation, as it addresses other radionuclides, is redundant of Eddleman 8 and is therefore *rejected*.

Eddleman 62 alleges that Applicants have not taken appropriate measures to reduce the environmental impact of uranium milling. Applicants, however, have no control over milling; nor do the regulations require them to attempt to exert such control. Moreover, the methods of milling and its impact are appropriate issues in a materials license proceeding for the operation of a uranium mill, not for the operation of a utilization facility. *See* 10 CFR Part 40. Eddleman 62 is *rejected*.

Eddleman 63 is virtually identical to Eddleman 56, on which we deferred a ruling.

Eddleman 64 is a series of subparagraphs alleging various safety and environmental consequences flowing from the transportation and storage of spent fuel from Robinson and Brunswick to Harris. We rule on each subparagraph, as follows:

(a) is a sabotage contention; it is treated like the other contentions questioning the security plan. *See* discussion of Kudzu 12. Our ruling is *deferred*.

(b) alleges that the dangers from a spent fuel pool LOCA will be increased by the presence of spent fuel assemblies from Robinson and Brunswick. Section 9.1 of the FSAR discusses the design basis of the spent fuel pool, including conditions at maximum storage and a safety analysis which demonstrates that the spent fuel will always be covered with water. The contention does not address this discussion and therefore is *rejected* for lack of a specific basis.

(c) concerns handling of spent fuel. Like (b), it fails to address the Applicants' treatment of this subject in the FSAR (section 9.1.4) and ER (section 7.1.10). It is *rejected* for the same reason.

(d) concerns accidents in transportation of spent fuel. Our ruling is *deferred* until the Staff's impact statement is available. We will then reconsider our tentative view that Table S-4 governs transportation accident impacts.

(e), like (d), concerns transportation accidents; ruling on it is also *deferred*.

(f) alleges that the safety valves on spent fuel casks are likely to unseat or that the plastic components of the valves would melt in a fire. The Applicants oppose on the ground that this is an attack on the rules — *i.e.*, Part 73 — but they point to no specific rule. This contention is *accepted*.

(g) alleges that the Applicants' shipment casks are dangerous because they have never been tested physically, including tests while pressurized. The Applicants again cite all of Part 73, with which they say their casks will comply. As a common sense matter, one would think that the Applicants would, as a safety precaution, test their casks in *some* fashion. Since our attention is not directed to a specific rule

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making cask testing unnecessary, explicitly or by implication, this contention is *accepted*.

(h) and (i) seek to place in issue the adequacy of NRC procedures relating to cask testing and accidents. Because they are advanced without reference to the Applicants' proposals, they are beyond the scope of this proceeding, and they are *rejected*.

(j) alleges that the Applicants have failed to prove that emergency fire and police personnel along their spent fuel transportation routes have adequate training and equipment. Applicants are normally not required to prove things that are largely beyond their control. The requirement of 10 CFR 50.47 of proof that offsite emergency plans are adequate — including adequacy of training and equipment for local emergency personnel — is exceptional, as indicated by the clause (10 CFR 50.47(c)(1)) allowing the Applicants to meet local preparedness requirements by alternate means. The security requirements governing spent fuel shipments (10 CFR 73.37) impose no express obligation to train or equip local fire and police personnel, and we decline to imply such an obligation. This contention is *rejected*.

(k) alleges a lack of adequate radiological monitoring along Harris spent fuel shipment routes. The Applicants contend that this is a health and safety issue over which the Board has no jurisdiction. This is correct with respect to spent fuel from Robinson and Brunswick — the thrust of this contention, when read in context — and the contention as drafted does not allege a NEPA violation, over which we would have jurisdiction. This contention is *rejected*.

Eddleman 64x. At the prehearing conference Mr. Eddleman proffered a contention 64x which contained elements essentially similar to subparagraphs (b) and (c) above. It is also *rejected* for lack of a specific basis.

Eddleman 65 alleges that the Applicants' prime contractor "has a history of building defective base mats and containments (*e.g.*, Callaway, Wolf Creek, Farley)." Because of this, the contention calls for ultrasonic analysis of the containment and base mat to detect possible voids. If this contention can be supported by evidence, it may have substance. The Applicants' opposition to it is based on their view of the merits, not on any flaw in the contention as an abstract proposition. Contrary to the Staff's argument, we think there is a common sense nexus, based on human experience, between the kind of work an organization has done on other projects and the project in question. This contention is *admitted*. However, we do not intend to embark on a broad-ranging review of the contractor's past work at other projects. The circumstantial evidence possibly to be obtained would not be worth the time and effort involved. If it develops that Mr. Eddleman has little or no evidence to back up this contention, it may be amenable to summary disposition.

Eddleman 66 alleges that the Applicants lack the financial resources necessary to decontaminate following a serious, TMI-type accident. Under 10 CFR 50.54(w), the Applicants will be required to purchase private insurance to cover

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such decontamination costs, subject to certain conditions. Beyond this provision, no showing of financial resources is required. This contention is *rejected* as an attack on the cited rule.

Eddleman 67 alleges that operation of Harris is unsafe because of the absence of a low-level waste disposal site. Applicants do not deny Mr. Eddleman's assertion that neighboring states will not accept low-level waste from North Carolina; instead, Applicants assert that North Carolina is responsible for providing and therefore will provide such a site. We find this response unsatisfactory, and we believe some specific provision should be made for low-level waste disposal. Accordingly, Eddleman 67, as it relates to health and safety, is accepted. Eddleman 67 also alleges that low-level waste disposal needs to be taken into account in the NEPA analysis. The S-3 table, however, includes low-level waste disposal in its quantification of fuel cycle emissions, and Mr. Eddleman has already raised as a contention the health effects of the S-3 emissions (Eddleman 8). The NEPA issue in Eddleman 67 is therefore redundant and is *rejected*.

Eddleman 68 and 69 allege that there is no assurance that high-level waste can be disposed of and further generation of such material should not be permitted. The availability of a high level waste disposal site is the subject of the "waste confidence" rulemaking, 44 *Fed. Reg.* 45362 (1979), and litigation of the issue is precluded as a collateral attack on the rulemaking proceeding. *Public Service Electric and Gas Company, et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 69 (1981). Eddleman 68 and 69 are *rejected*.

Eddleman 70, on containment penetration, was *withdrawn*. Tr. 427.

Eddleman 71 and 72 allege that Harris equipment is not adequately environmentally qualified (*i.e.*, will withstand operating and accident conditions). Eddleman 71 also argues that equipment should be qualified to withstand Class IX accidents. Class IX accidents are not design basis accidents, and Commission Order CLI-80-21, 11 NRC 707 (1980), *supra*, has endorsed NUREG-0588 as the standards meeting the general design criteria of 10 CFR Part 50, App. A. *See* discussion of Eddleman 9, *supra*. Eddleman 71 is therefore an attack on the Commission's Order and is *rejected*. Eddleman 72 is redundant of Eddleman 9, and is *rejected*.

Eddleman 73 alleges that the Harris facility is not in compliance with unspecified parts of the TMI Action Plan which, as approved by the Commission, is in NUREG-0737. There are many separate elements in the Action Plan which the Applicants are required and committed to meet. Absent a specification by Mr. Eddleman of which of these elements will not be met, this contention must be *rejected* for lack of specificity.

Eddleman 74 charges that the NRC is not following the recommendations of the Kemeny Commission and the Rogovin Special Inquiry Group in changing its attitude toward safety, assisting intervenors and other matters. Unless and until a

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specific recommendation has been adopted by the Commission, it has no regulatory effect. The desirability of adopting a particular recommendation exceeds the scope of this proceeding. The contention is *rejected*.

Eddleman 75 is difficult to understand. Its six sentences contain 355 not very carefully chosen words, averaging 59 words per sentence. This "contention," to use the term loosely, touches on several complex and separate topics. It begins with a suggested loss of access to the facility's heat sink through various causes, progresses through a variety of steam generator problems, mentions the corrosive effect of biocides added to cooling tower water, and concludes with a postulated fouling of the condensers by clams, oysters or barnacles. We are told that the clams or barnacles might be brought to the cooling towers by a worker or a "saboteur." It is claimed that the clams or barnacles might block access to the heat sink, with "serious safety consequences." Had we any authority to reject a contention on its merits, we would reject this clam and barnacle scenario because we can scarcely imagine that it could present a safety problem, as alleged. For that to happen, the clams would have to clog most of the condensers simultaneously, a very unlikely scenario. Nevertheless this contention is *admitted*, subject to the possibility of a summary disposition motion. The rest of this contention is *rejected* for lack of specificity and failure to meet minimal standards of clarity.

Eddleman 76 and 77 allege inadequacies in cable insulation and describe possible consequences. Whether the cable is properly qualified, however, is the subject of Contention 11, which has been accepted. Eddleman 76 and 77 are therefore redundant and are *rejected*.

Eddleman 78 is written entirely by hand. 10 CFR 2.708 requires that documents filed in adjudications be typed or printed. The main reason for the rule, as illustrated by this contention, is that handwritten documents are hard to read. We would not, of course, apply the rule to the interlineation by hand of a few words or phrases. And in Mr. Eddleman's case, we have overlooked much more than that. However, an entire lengthy contention is more than we can accept in handwriting. This contention is *rejected* as a violation of 10 CFR 2.708.

Eddleman 79 concerns a postulated collapse of a cooling tower resulting in a loss of "heat sink" — *i.e.*, inability to remove core decay heat. As explained by the Applicants (Response at 132, FSAR sections 9.2.1.2, 10.4.5), the cooling tower basins are not required for safe shutdown or cooldown of the reactor. They are designed for different purposes. This contention is *rejected* because the safety assumptions it embodies cannot be accurately ascribed to this facility.

Eddleman 80 alleges that the mixing and dispersion models for radionuclide emissions from Harris are deficient because they assume more complete dispersion than is realistic and do not adequately account for rainout. Eddleman 80 is *accepted*.

Eddleman 81 concerns emergency planning; it is *deferred*.

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Eddleman 82 alleges that Applicants' preoperational radiation monitoring program is inadequate because there are not enough sampling points and the procedures followed are insufficient. The contention does not indicate how the alleged inadequacies would adversely affect public health and safety or the environment; nor is an adverse impact self-evident. Accordingly, we find this contention to be without basis; Eddleman 82 is *rejected*.

Eddleman 83 and 84 allege that the environmental impact of chemical releases from the Shearon Harris plant has not been adequately assessed. At the prehearing conference, Mr. Eddleman submitted a reworded contention, which we view as a replacement for these two contentions. We find the reworded contention to be sufficiently specific and to provide adequate basis. We reject Applicants' position; neither consideration of this issue at the construction permit stage nor compliance with the Federal Water Pollution Control Act relieve Applicants and Staff of their duty under NEPA or foreclose contentions addressing the adequacy of the environmental analyses. Eddleman's "proposed contention on chemical pollutants/carcinogens from SHNPP" is *accepted*.

Eddleman 85 and 86 allege deficiencies in the environmental statement's consideration of fish kills. Ruling on this contention is *deferred* until after the environmental statement is available.

Eddleman 87 alleges that the environmental statement does not sufficiently consider psychological stress. As discussed at Eddleman 37(a), *supra*, psychological stress should not be considered. Eddleman 87 is *rejected*.

Eddleman 88 asserts deficiencies in the forthcoming environmental statement and emergency plans; it is *deferred*.

Eddleman 89 alleges that the environmental statement will not adequately assess the destruction of wildlife habitat caused by constructing Harris and the cost of restoration after the plant is decommissioned. This proceeding addresses operation of the plant, and the environmental statement will address the environmental impact of operation. The decision to commit those resources has been made, and the impact of that commitment is no longer relevant. In addition, there is no requirement that CP&L restore the Shearon Harris site after decommissioning. Moreover, entertainment of this contention is inappropriate in view of the Commission's generic rulemaking on decommissioning criteria. *See* discussion of Wilson IVA(d), *supra*. Eddleman 89 is *rejected*.

Eddleman 90 alleges that the ES does not include the costs of restoring the excavations for cancelled Units 3 and 4. These costs are irrelevant to the cost/benefit balance for operation of Shearon Harris Units 1 and 2, and their consideration would exceed the scope of this proceeding. Eddleman 90 is *rejected*.

Eddleman 91 concerns offsite radiation monitoring of the Harris facility by the State of North Carolina. It alleges that such monitoring is inadequate and that this situation may get worse because of anticipated budget cuts. Outside of the emergency planning context, NRC regulations do not require that any offsite

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monitoring be performed by the State and the Applicants do not propose to look to the State to meet offsite monitoring requirements. The Contention is *rejected* because it does not raise an issue within the scope of the proceeding.

Eddleman 92 alleges that the emergency core cooling system (ECCS) would be inadequate if, due to stud bolt failure, the vessel head blew off. The Contention, however, gives no indication how the ECCS is inadequate (or that any system could be adequate for such an accident); rather, the crux of the Contention is that stud bolts, when exposed to borated water, can corrode and fail. Stud bolt failure is the subject of Eddleman 131. Eddleman 92 is therefore redundant and is *rejected*.

Eddleman 93 alleges that the SER is inadequate in failing to analyze potential criticality in a damaged core. No credible accident scenario, however, is advanced as a basis for considering a Class IX accident (*i.e.*, an accident where core integrity is not maintained). The safety analysis need only ensure that Shearon Harris complies with the Commission's general design criteria and the Harris safety systems are adequate to respond to design basis accidents. *See* 45 *Fed. Reg.* 65475 (1980) and discussion at Eddleman 36 *supra*. Eddleman 93 is an attack on the Commission's regulations and is *rejected*.

Eddleman 94 concerns financial qualifications and is *rejected* as an attack on 10 CFR 50.33(f), as amended, 47 *Fed. Reg.* 13750 (1982).

Eddleman 95 concerns the environmental impact statement; it is premature and therefore *deferred*.

Eddleman 96 alleges that polyethylene insulation on safety-related cable could fail. This contention is redundant of Eddleman 11 and is therefore *rejected*.

Eddleman 97, 99 and 100 concern emergency planning; they are premature and therefore *deferred*.

Eddleman 98 contends that Applicants should be required to provide a new wildlife habitat to replace that destroyed by the construction of the facility. This is largely a legal argument. The Applicants assert that there is no such restoration or compensation requirement applicable to them. If there is, it would presumably be a matter of NEPA law. In any case, it would appear that any such requirement would be more appropriately imposed at the construction permit stage. We think it is incumbent on Mr. Eddleman to file a legal memorandum from qualified counsel in support of his contention if he wishes us to give it any further consideration. Such a memorandum is due 30 days following this Memorandum and Order.

Eddleman 101 is *superseded* by Joint Contention I on management.

Eddleman 102 is *superseded* by Joint Contentions III-VI on radiological monitoring.

Eddleman 103 alleges that the onsite counting laboratory is not sufficiently shielded to permit fast and accurate sample analysis in the event of an emergency. We view this as an emergency plan contention, and *defer* our ruling until the emergency plans are available.

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Eddleman 104 alleges that the ES cost/benefit analysis is deficient in failing to take into account uncertainties in decommissioning costs. Consistent with our discussion of Wilson IVA, above, Eddleman 104 is *rejected*.

Eddleman 105 alleges that "new information" on credibility of class IX accidents makes the established exclusion area and low population zone erroneous. This contention apparently assumes that only design basis accidents are used in establishing these zones, which are siting criteria. However, 10 CFR Part 100 requires establishing these zones based on a breach of containment accident. The contention does not indicate how the postulated releases in Reg. Guides 1.4 and 1.70 are insufficient and how the analysis should be changed. If the contention is in fact asserting that an even more severe accident should be postulated for the purposes of establishing these zones, it is not sufficiently specific. Eddleman 105 is *rejected*.

Eddleman 106 is *superseded* by Joint Contention I on management.

Eddleman 107 alleges deficiencies in the as yet unwritten Safety Evaluation Report for the Harris facility in its treatment of unresolved safety issues. This contention is premature. Mr. Eddleman should review the discussion of unresolved safety issues in the SER when it becomes available and then revise this contention, as appropriate. Our ruling on it is *deferred*.

Eddleman 108. The Board experienced some difficulty in determining just what contentions were set forth in this nearly two-page statement, but we believe it can be paraphrased as follows:

1. The performance of plant instrumentation and controls under normal and up through "Class 9" conditions should be evaluated onsite at either Harris or a comparable plant;
2. the performance of the Harris steam generators should also be evaluated under these conditions; and
3. a complete record of operational experience with all plant systems should be compiled to form a basis for modification of the existing systems.

Parts 1 and 2 are totally impractical insofar as performing a "Class 9" simulation *in situ* is concerned. Moreover, the contention does not address any inadequacies in the Applicants' test program, as set forth in FSAR Chapter 14, for both normal and abnormal conditions. Part 3 is also unsound. A record of operating experience exists, *e.g.*, in NRC files of Licensee Event Reports. The contention fails to address any perceived inadequacies in this, and other, bodies of knowledge of operational experience. Eddleman 108 is therefore *rejected*.

Eddleman 109 alleges generally that the ER is deficient in its description of the chemical, radiological, and thermal releases from Shearon Harris, and in its description of environmental baseline data. This contention is vague, overbroad, and advances no basis for considering the ER inadequate. Mr. Eddleman's specific concern with the impact of chemical releases and their interaction with existing

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pollutants is the subject of contentions 83 and 84, as amended, which were accepted. Eddleman 109 is *rejected*.

Eddleman 110 is a two-page, two-sentence laundry list of alleged deficiencies in the FSAR and SER, much of it incomprehensible. Boards should not be burdened with material of this quality. This contention is *rejected*.

Eddleman 110x alleges certain deficiencies in the unwritten environmental statement. It is *deferred*.

Eddleman 111 alleges that the Shearon Harris systems and controls are not sufficiently independent of one another, and a comprehensive failure modes and effects analysis is warranted. The contention does not specify which systems are interdependent. Moreover, the contention is redundant of Eddleman 7. Therefore, Eddleman 111 is *rejected*.

Eddleman 112 through 114 are *superseded* by Joint Contention VII on steam generators.

Eddleman 115 concerns the phenomenon of Anticipated Transients Without Scram (ATWS). This generic problem is currently the subject of an ongoing rulemaking. The Commission stated in initiating that rulemaking:

> The Commission believes that the likelihood of severe consequences arising from an ATWS event during the two to four year period required to implement a rule is acceptably small. . . . On the basis of these considerations, the Commission believes that there is reasonable assurance of safety for continued operation until implementation of a rule is complete.

46 *Fed. Reg.* 57521. It is clear from the quoted language that the Commission wishes to confine these generic issues to the generic rulemaking context. The Harris facility will, of course, be subject to the outcome of the ATWS rulemaking. *See Potomac Electric Power Company* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 85 (1974). Therefore Eddleman is *rejected*.

Eddleman 116 alleges that the plant's fire protection systems are inadequate. The contention focuses primarily on alleged inadequacies with respect to the plant's computer system. As pointed out by the Applicants, this contention is faulty in two respects. First, it assumes that a properly functioning computer system is necessary for safe shutdown. This inaccurately ascribes a safety function to this plant's computer which it does not possess. The computer system is not necessary for safe shutdown or for any control function. *See* Applicants' response at 142-144. Second, the Applicants' fire protection systems are discussed in FSAR Section 2.5. Mr. Eddleman does not address that discussion and thus the contention lacks the required specificity. Eddleman 116 is *rejected*.

Eddleman 117 and 118 concern emergency planning; they are *deferred*.

Eddleman 119 does not appear to be a complete sentence. In any event, it is unintelligible; it is *rejected*.

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Eddleman 120 alleges that the Harris design provides inadequate crash-proof protection of wiring. The contention, however, does not address the protective measures that Applicants have taken and offers no specifics. Eddleman 120 states no basis with specificity and is *rejected*.

Eddleman 121 concerns emergency plans and is *deferred*.

Eddleman 122 is an impermissible challenge to financial qualifications; it is *rejected*.

Eddleman 123 is *superseded* by Joint Contention I.

Eddleman 124 concerns emergency plans and is *deferred*.

Eddleman 125 asserts that the Commission's design criteria are inadequate to project public health amd safety because of the likelihood of a Class IX accident. This contention is an attack on the Commission's regulations. Eddleman 125 mentions several accident scenarios, but fails to indicate that these scenarios are credible and that Shearon Harris presents a unique risk. Eddleman 125 is *rejected*.

Eddleman 126 alleges that consideration of Class IX accidents must be included in the NEPA evaluation. The allegation is true. We *defer* ruling on Eddleman 126 until the FES is issued. *See* discussion of Kudzu 2, above.

Eddleman 126x alleges that the ER should analyze the environmental effects of spent fuel transportation from other CP&L plants to Harris, and factor them into the cost/benefit analysis. As discussed at CCNC 4, above, our tentative view is that Table S-4, or some multiple thereof, should govern the environmental impacts of transportation. We are *deferring* a ruling on this contention until after the Staff's draft impact statement is available.

Eddleman 127 and 127x are *superseded* by Joint Contention I.

Eddleman 128 addresses an explosive hydrogen-oxygen reaction inside containment. This issue is presently in the rulemaking process, and the contention would normally be denied. The issue can be litigated, however, if it postulates a credible scenario for hydrogen production. The key word here, in the Board's view, is credible. The scenario presented in the contention, while imaginative, suffers from the assumption of too many "ugly horribles" to be believable. In addition, the underlying premise of the contention, that the igniter system would not work, ignores the fact that the Harris plant does not use an igniter system, but relies on redundant electric hydrogen recombiners. Eddleman 128 is *rejected*.

Eddleman 129 discusses the alleged effects of the capital investment in the Harris facility on the availability of jobs in the area. Such an issue might be relevant at the construction permit stage, but it is beyond the scope of this narrowly focused operating license proceeding, where construction costs are deemed to be "sunk." This contention is *rejected*.

Eddleman 130 alleges the possibility of vessel metal fatigue. This contention is redundant of Eddleman 47, which was withdrawn after Mr. Eddleman indicated that he was satisfied with the vessel alloy's composition. (Tr. 377). Eddleman 130 is therefore also deemed *withdrawn*.

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Eddleman 131 alleges the possibility of stud bolt failure due to the corrosive effect of borated water. The contention, however, does not indicate why or how reactor closure studs would be exposed to borated water; in fact, the FSAR specifically provides that the studs are not to come in contact with borated water. Eddleman 131 does not indicate any failings in Applicants' fuel loading procedures that might nevertheless result in such contact. The contention is vague and speculative, and advances no basis for its consideration. Eddleman 131 is *rejected.*

Eddleman 132 on control room analysis, which both Staff and Applicants found acceptable, is *accepted.*

Eddleman 133 concerns the Harris security plan. *See* discussion of Kudzu 12, above.

Eddleman 134 suggests without any specificity that the diesel generators for Harris may not meet "sufficiently high" standards of construction and operation. The relevant FSAR sections are not discussed or even referred to. The contention is *rejected* for lack of specificity.

Eddleman 135 asserts that Applicants have failed to ensure funds are available for decommissioning. This contention is explicitly barred by Commission regulation (10 CFR 50.33(f)(1), as amended, 47 *Fed. Reg.* 13754 (1982)) and is *rejected.*

Eddleman 136 alleges that the Applicants have failed to comply with the Endangered Species Act because of the impacts of construction of Harris on the Bald Eagle and Red-cockaded Woodpecker. Like a similar Eddleman contention, number 98, the contention is largely legal argument. We are requiring submission within 30 days of a legal memorandum, preferably from qualified legal counsel, replying to the Applicants' response, before we will give this contention any further consideration.

Eddleman 137, 139 and 140 concern emergency planning; they are *deferred.*

Eddleman 138 alleges that the Shearon Harris electrical drawings are not in the local public document room and are not sufficiently detailed. That the electrical drawings are not in the LPDR is true. These voluminous papers are not required to be placed in the LPDR. We question whether Mr. Eddleman has ever seen them. Assuming that he has, the claim that the drawings do not include sufficient detail is simply too broad and vague for a valid contention. Eddleman 138 is *rejected.*

7. *Lotchin Contentions*

Lotchin 1 alleges in part that the Harris site is not "remote," that it is located in one of the most populous areas of the state. This contention could be read as an impermissible attack on the siting criteria of 10 CFR Part 100. Alternatively, it might be read to contend that the Harris site does not comply with Part 100. If read in this way, however, it would lack the required specificity. This part of the contention is *rejected* for those reasons.

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The remainder of this contention raises policy questions beyond the scope of this proceeding. For example, it alleges that the people living near the plant were given no choice in the matter. Although the Atomic Energy Act might be amended to provide for a local referendum on nuclear plant proposals, that is not presently required.

Lotchin 2-4 discuss a range of topics, including some that are arguably attacks on NRC rules. However the general thrust of these contentions is toward the alleged inadequacy of emergency planning for the Harris facility. Our ruling on these contentions, like other emergency planning contentions, is *deferred*.

8. CANP Contentions

CANP 1 adopts Eddleman 56, 57 and 81, on which rulings are deferred. CANP 1 is also deferred.

CANP 2 adopts Eddleman 112 and 113 on steam generators; this contention is *accepted*, but is limited in scope to part 2 of the joint contention on steam generators, which addresses corrosion problems.

CANP 3 adopts Eddleman 3 on management. This contention is *accepted*, but is limited in scope to the joint contention on management, as admitted.

CANP 4 adopts Eddleman 41 and 42. Consistent with our discussion of those contentions, CANP 4 is *accepted*, but it is limited in scope to the allegation that there exist defective hanger welds that have been improperly inspected and approved.

CANP 5 adopts Eddleman 37 and 82. Consistent with our discussion of those contentions, this contention is *accepted*, but it is limited in scope to Eddleman 37(b) and the joint contention on health effects.

CANP 6 adopts Eddleman 29. Consistent with our discussion of that contention, CANP 6 is *accepted*, but is limited in scope to an environmental assessment of the health effects of radioiodines.

CANP 7 alleges that consideration must be given to declining availability of "specialized engineering and manufacturing capacity" and to the trend toward deregulation. The contention is somewhat vague. It might well be suitable for discussion in a college classroom or before a Congressional committee considering a grant program for engineering students. We may be considering the qualifications of some prospective employees at Shearon Harris. But the social conditions that produce suitably trained personnel are simply beyond the scope of this narrowly focused proceeding. CANP 7 is *rejected*.

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E. Motion by CHANGE to Defer Hearings on Unit 2

Intervenor CHANGE has moved to defer hearings on Unit 2.[18] At the present time, construction of that unit is only about five percent complete. CHANGE asserts that proceeding with an operating license hearing on both units when construction of Unit 2 is just beginning threatens to abrogate the two-step licensing process because intervenors may be foreclosed from contesting design changes and construction practices. Expressing concern that Unit 2 may never be completed, CHANGE argues that an operating license proceeding should not be commenced until there is "reasonable assurance that construction of the facility will be substantially completed."

The Applicants and the Staff oppose the CHANGE motion. The principal arguments they advance are (1) that bifurcation of the proceeding is outside the Board's jurisdiction, and (2) that practicality compels holding a single hearing, because the safety and design issues are common to both units.

As a matter of policy, operating license proceedings commence well before construction is complete so that facilities eligible for licensing will not be unnecessarily idled. *See Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452 (1981). Typically, the evidentiary hearing is not held until a year or more after the proceeding begins, and the proceeding may not be completed for another year or more. Thus there is no anomaly in conducting an operating license proceeding while substantial amounts of construction remain to be done, particularly where two or more units are involved. *See* 10 CFR Part 2, App. A, §VIII(b)(1).

In addition to avoidance of delay, there are practical advantages in conducting simultaneous operating license proceedings for multiple units at the same site. For example, the effects of effluents on the environment are more realistically viewed in the aggregate from multiple units, rather than piecemeal. There are advantages for Applicants, efficiencies for the NRC Staff, and no prejudice to intervenors from the early litigation of design issues common to several units.

To be sure, if design changes are made or construction deficiencies come to light at Unit 2 toward the end of this proceeding, there is the possibility that they might escape Board scrutiny. In these circumstances, however, a late contention might well be admitted. 10 CFR 2.714(b). Furthermore, if some issues remain unresolved at the close of this proceeding, CHANGE could then move that the Board retain jurisdiction over them. *See Cleveland Electric Illuminating Company, et al.*

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[18] Renewal and Reformation of Motion by CHANGE/ELP, July 13, 1982. ELP had made a similar motion prior to its admission as a party and consolidation with CHANGE. Motion to Postpone or Separate Proceedings or Other Relief, March 16, 1982.

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(Perry Nuclear Power Plant, Units 1 & 2), LBP-81-24, 14 NRC 175, 209 (1981).[19] With these considerations in mind, the CHANGE motion is *denied*.

F. Service of Documents

The Rules of Practice, 10 CFR 2.701(b), require that all documents offered for filing in adjudications — *e.g.*, motions, testimony, briefs — shall be served on the other parties. As pointed out by the Applicants, however, this provision does not require service of documents exchanged between the Applicants and the Staff in the review process. On the other hand, such documents can have an important bearing on an adjudicatory proceeding, particularly in developing additional contentions based on new information. In recognition of that fact, the Licensing Board in the ongoing *Catawba* proceeding recently required that "the Intervenors be served with copies of all relevant documents generated by the Applicants and the Staff in connection with this operating license proceeding." We asked the Staff and the Applicants to advise us of any objections they might have to the entry of a similar order in this case.

As to the Staff, they made a commitment at the conference, reaffirmed in a later filing, to serve the papers they originate relating to the Shearon Harris operating license application on all persons admitted as Intervenors. That voluntary commitment, which is as broad as the *Catawba* order, is accepted by the Board. Therefore, as concerns the Staff, no Board order is necessary.

The Applicants object to a Catawba-type order, and argue that it could be too costly.[20] Three of the Intervenors filed papers in response, arguing that a *Catawba*-type order was essential.[21] We have considered these submissions and without restating all of the arguments conclude that a *Catawba*-type order, modified to lessen the costs in this case, is warranted. There could be significant costs entailed in requiring reproduction and service of papers on all six Intervenors. We think that would be unnecessary. Such costs could be very much reduced, however, by providing for service on a lead Intervenor representing other Intervenors living in the same area. Thus we can provide for service on the Kudzu Alliance as the lead for all Intervenors in the Raleigh area — themselves, CANP and Dr. Wilson. We can provide for service of a second set of papers on CHANGE as the lead for all

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[19] The Applicants argue that CHANGE's interests will be adequately protected by the right to file an enforcement petition under 10 CFR 2.206 as to matters that may arise after this proceeding is over and before construction is completed. We reject this argument because the responsible NRC enforcement officials have rather broad discretion to deny such petitions. By contrast, intervenors raise contentions as a matter of right.

[20] Applicants' Position on Service of Documents dated August 10, 1982.

[21] Motion from Dr. Wilson to Compel Service of Documents dated August 20, 1982; CHANGE Answer in Support of Motion dated August 30, 1982; Eddleman Response to Applicants' Position dated August 17, 1982.

Intervenors in the Chapel Hill-Durham area — themselves; CCNC and Mr. Eddleman. The Intervenors can arrange among themselves to share access to these papers.

Accordingly, the Applicants are ordered, in addition to their other service obligations,[22] to serve copies of all relevant documents they generate for review by the NRC Staff in connection with this proceeding, including amendments to the FSAR and other written technical documents. Such documents shall be served upon Kudzu Alliance and CHANGE, the representatives of all Intervenors for this purpose.

G. Discovery, Schedules for Further Action, and Objections

Discovery is authorized as of the date of this Order. *See* 10 CFR 2.740, *et seq.* The scope of discovery is confined to the contentions we have admitted.

The Board is not at this time establishing schedules for discovery or further actions in this proceeding primarily because the Staff's required documents and the emergency plans are not yet available. We will consider suggestions from the parties for schedules as those documents become available, beginning presumably with the draft environmental statement.

Orders of this kind are governed by 10 CFR 2.751a(d), which provides in pertinent part that —

> Objections to the order may be filed by a party within five (5) days after service of the order, except that the staff may file objections to such order within ten (10) days after service. Parties may not file replies to the objections unless the Board so directs. The filing of objections shall not stay the decision unless the presiding officer so orders. The board may revise the order in consideration of the objections presented and, as permitted by §2.718(i), may certify for determination to the Commission or the Atomic Safety and Licensing Appeal Board, as appropriate, such matters raised in the objections as it deems appropriate. The order shall control the subsequent course of the proceeding unless modified for good cause.

In view of the number and complexity of contentions in this case, the Applicants and the Intervenors may mail any objections to this Memorandum and Order no

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[22] We expect the Applicants to adhere to their commitment at the conference to serve the emergency plans on each Intervenor.

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later than October 15, 1982. Any Staff objections shall be mailed by October 25, 1982.

THE ATOMIC SAFETY AND
LICENSING BOARD*

Glenn O. Bright
ADMINISTRATIVE JUDGE

Dr. James H. Carpenter
ADMINISTRATIVE JUDGE

James L. Kelley, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 22nd day of September, 1982.

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*The Board gratefully acknowledges the expert assistance of David R. A. Lewis in the preparation of this Memorandum and Order.

Directors' Decisions Under 10 CFR 2.206

DIRECTORS' DECISIONS

2114A

Cite as 16 NRC 2115 (1982) DD-82-13

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Edson G. Case, Acting Director

In the Matter of **Docket Nos. 50-352**
50-353
(10 CFR 2.206)

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2) **December 7, 1982**

The Acting Director of Nuclear Reactor Regulation denies a petition filed by Del-Aware which requested suspension or revocation of the construction permits for the Limerick Station unless the licensee submitted an alternative to the planned Supplemental Cooling Water Supply System at Point Pleasant, Pennsylvania.

NEPA: NRC RESPONSIBILITIES

The scope of the NRC's environmental review of a project may be limited to one segment of a project so long as (1) that portion has independent utility and (2) the approval of that segment does not foreclose alternatives to the part of the project not being considered.

RULES OF PRACTICE: §2.206 PETITIONS

The Director need not consider issues raised in a 10 CFR 2.206 petition which the petitioner is litigating or had an opportunity to raise before a Licensing Board in a pending adjudication or for which the petitioner provides no factual basis for the requested relief.

RULES OF PRACTICE: SHOW-CAUSE PROCEEDINGS

The Director will not institute proceedings to suspend or revoke construction permits on environmental matters in the absence of a showing of a major change in material facts.

NEPA: NRC RESPONSIBILITIES

The NRC staff may use environmental impact statements prepared by other agencies as the basis for its own assessment of the environmental impacts of a proposed section.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

Introduction

By letter dated July 2, 1982, Robert J. Sugarman, on behalf of Del-Aware Unlimited (Petitioner), filed with the Office of Nuclear Reactor Regulation a "Request for Suspension or Revocation of Construction Permits Pursuant to 10 CFR §2.202 and §2.206(a)" (Petition). Del-Aware requested actions be taken to compel submission of an alternative to the Supplemental Cooling Water Supply System (SCWS system) planned at Point Pleasant, Pennsylvania, and to prevent construction of the planned SCWS system. The Petition also sought immediate suspension or revocation of Construction Permits Nos. CPPR-106 and CPPR-107 currently held by the Philadelphia Electric Company (PECO) for the construction of its Limerick Generating Station, Units 1 and 2 (the Facility). On August 4, 1982, I acknowledged receipt of the Petition and indicated that I would take no immediate action with respect to the Petition for the reasons presented in my letter. I further indicated that I would respond to the Petition within a reasonable time. My decision with respect to the Petition follows. In reaching my decision, I have considered the additional information contained in letters from Petitioner to me dated July 20, 1982, August 13, 1982, September 3, 1982, and September 23, 1982 and a Supplement to the original Petition dated November 8, 1982. I have also considered PECO's submittals of September 3, 1982 and September 30, 1982.

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Issues Raised

In Petitioner's voluminous filings,[1] issues are raised regarding a SCWS system for the Limerick Facility. The issues are not associated with public health and safety impacts of the Facility but are issues related to the environmental impacts allegedly associated with the SCWS system.

The SCWS system for the Limerick Facility would draw water from the Delaware River. The water would then be pumped from the Delaware River at Point Pleasant, Pa. several miles through a Combined Transmission Main to the Bradshaw Reservoir. Approximately one half of the water would be pumped through the Perkiomen Transmission Main and then flow down the East Perkiomen Creek. From the creek, the water is pumped via transmission main to the Limerick Facility. The remainder of the water would be available to the Neshaminy Water Resources Authority (NWRA) for its use in providing water to Central Bucks and Montgomery Counties, Pa. for public use.[2]

The SCWS system has been the subject of environmental scrutiny for a period in excess of 10 years and by an array of governmental agencies including the U.S. Atomic Energy Commission (now U.S. Nuclear Regulatory Commission), the Delaware River Basin Commission (DRBC), the U.S. Army Corps of Engineers (Corps), and the Pennsylvania Department of Environmental Resources (PA DER).[3]

Each of these governmental agencies completed environmental studies prior to reaching their respective decisions. The DRBC conducted a full environmental review of the PPD Project and issued a final environmental impact statement in

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[1] The Petition is 40 pages in length and the Supplement comprises 19 pages. Attachments to these documents and Petitioner's letters and their attachments comprise an additional several hundred pages.

[2] The pumping station at Point Pleasant, Pa., the Limerick SCWS system and the Neshaminy project will hereinafter be referred to together as the Point Pleasant Diversion Project or PPD Project. Commencement of construction of the PPD Project is scheduled for December 15, 1982. This project serves both the Limerick Facility and the NWRA.

[3] The U.S. Atomic Energy Commission (AEC), the U.S. Nuclear Regulatory Commission (NRC) and the Corps are Federal agencies. The DRBC is a regional agency created by an intergovernmental compact and given federal ratification by a joint resolution of Congress. The agency is comprised of representatives of the Federal Government and the States of Delaware, New Jersey, New York, and Pennsylvania and has responsibility for water supply and water quality matters related to the Delaware River and its tributaries. Water allocation to projects in the Delaware River Basin is accomplished by the DRBC through its Comprehensive Plan. The DRBC is considered a Federal agency for purposes of the National Environmental Policy Act (NEPA). PA DER is an agency of the State of Pennsylvania. Decisions and authorizations issued by these agencies concerning the PPD Project include: *Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), LBP-74-44, 7 AEC 1098 (1974); *Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), ALAB-262, 1 NRC 163 (1975); DRBC Decision Docket No. D-69-210 CP, March 1973; DRBC Docket No. D-65-76 CP (2), January 1967; DRBC Decision Docket No. D-65-76 CP(3), March 1971; DRBC Decision Docket No. D-69-210 (Final), November 5, 1975; DRBC Decisions Docket Nos. D-65-76 CP (5) and D-79-52 CP, February 18, 1981; Corps of Engineers Permit No. NAPOP-R-80-0534-3, October 25, 1982; PA DER Permits Nos. ENC:09-77, ENC:09-51, ENC:09-81; DAM 09-181 all issued on September 2, 1982.

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1973 (DRBC FEIS). In 1973, the AEC prepared a final environmental impact statement regarding the Limerick Facility (AEC FES/CP). DRBC conducted an updated environmental appraisal of the overall PPD Project and issued a Final Environmental Assessment and Negative Declaration in August 1980. Contemporaneous with the issuance of its permit on October 25, 1982, the Corps of Engineers issued a document summarizing its assessment of the environmental aspects of the permit entitled "Neshaminy Water Resources Authority Point Pleasant Diversion Project, Point Pleasant, Bucks County, Pennsylvania Environmental Assessment." In addition, PA DER performed a comprehensive environmental assessment of the entire PPD Project, summarized in its "Environmental Assessment Report and Findings, Point Pleasant Water Supply Project" issued in August 1982 (PA DER Environmental Assessment). All of these environmental studies culminated in favorable findings with respect to the PPD Project.

Notwithstanding the scrutiny which the PPD Project has received, Petitioner requests that construction of the SCWS system be stayed and that PECO be directed to submit alternative proposals for providing supplemental cooling water to the Limerick Facility. The Petitioner makes a number of allegations in support of this request. The main thrust and focus appear limited to alleged changed circumstances since issuance of the construction permits in the following areas:

1. The relationship between NWRA and PECO.
2. Continued construction of Unit 2 of the Limerick Facility.
3. Design and location of the intake for the Point Pleasant pumping station.
4. Cultural and historical resources.
5. Water quality.

The consideration of these issues follows below and, for the reasons there stated, I have declined to take any action with regard to them.

Certain other of these allegations raise issues which are not appropriate for consideration by this agency. A substantial portion of the Petition is devoted to the expression of concerns related to that portion of the PPD Project which would serve exclusively the needs of the NWRA. Pages 19 through 27 of the Petition deal almost exclusively with questions related to the need for, and the impacts associated with, that portion of the PPD Project which would in essence be the development of a water supply system by NWRA. Among the concerns raised are claimed pollution of Lake Galena, sludge disposal, and farmland preservation. The Supplement to the Petition again presents such concerns especially in its discussion of the so-called secondary impacts of the PPD Project.

Such concerns had been raised by the Petitioner before the Licensing Board in the current operating license proceeding regarding the Limerick Facility.[4] The Licensing Board concluded, as I have, that the portion of the PPD Project solely

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[4] Special Prehearing Conference Order (SPCO), LBP-82-43A, 15 NRC 1423, 1470, 1975 (1982).

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utilized by NWRA need not be considered in the NRC's environmental review of the Limerick Facility. However, the Petition goes to some substantial lengths to again argue that an environmental review of the complete PPD Project by the NRC is required since that segment of the PPD Project which would be utilized solely by NWRA would not be built but for the construction of the Limerick facility. The test for determining the scope of the NRC's environmental review for a particular project is not whether one segment of the project would not be built but for the other segment. The scope of environmental review may be limited to one segment of a project so long as (1) that portion has independent utility; and (2) the approval of that segment does not foreclose alternatives to the part of the project not being considered.[5] The PPD Project in fact consists of two projects each of which has independent utility. One serves to supply cooling water to Limerick; the other supplies water to an area served by the NWRA. Also, approval of the Limerick portion of the PPD Project will not foreclose alternatives to the NWRA portion because this latter portion has already been fixed by the decisions of the DRBC. Thus, the question of foreclosing alternatives is moot. In reaching its decisions, the DRBC reviewed the entire PPD Project in accordance with the requirements of NEPA. Following this review, the Project was added to the DRBC Comprehensive Plan. The PPD Project has recently again been given environmental scrutiny by DRBC, which culminated in a Final Environmental Assessment and Negative Declaration and final approvals for the Project. Thus, contrary to assertions in Petitioner's Supplement that the PPD Project has not received an overall environmental review, DRBC has performed just such a review on at least two occasions.

It is entirely appropriate in these circumstances then for NRC to limit its consideration to the common elements of the Project and those elements attributable solely to the Limerick Facility, and to exclude from consideration impacts associated exclusively with that portion of the PPD Project which has as its purpose supplementing the public water supply capabilities of the NWRA. Consequently, I decline to consider in my assessment of the Petition any of the environmental impacts associated with that portion of the PPD Project utilized solely by the NWRA.[6]

A number of issues raised in the Petition and its supplementing documents are directly related to the allocation of Delaware River water to the PPD Project. Specifically, the Petition alleges that the use of the Delaware River water by the Limerick Facility through its SCWS system would concentrate industrial effluents

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[5] *Duke Power Company* (Amendment to Materials License SNM-1773 — Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-651, 14 NRC 307, 313 (1981).

[6] Petitioner has had its opportunity to present this issue to the Licensing Board. As the Commission has stated, parties must be prevented from using 10 CFR 2.206 procedures as a vehicle for reconsideration of issues previously decided. *Consolidated Edison Company of New York, Inc.* (Indian Point, Units 1-3), CLI-75-8, 2 NRC 173, 177 (1975).

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and pollutants in the Delaware River and would affect the intrusion of salinity into the Delaware River from the Delaware Bay. Petition, p. 17. Petitioner's letter of September 3, 1982, points to acceptance by the DRBC of the so-called Level B Study regarding depletive uses of the Delaware River water and the effects of such usage upon dissolved oxygen levels. Petitioner's Supplement also alleges that "new" water quality problems now affect the Delaware River as evidenced by two draft reports issued by the DRBC,[7] which require reconsideration of depletive water uses of Delaware River water such as those associated with the PPD Project.

These matters are all aspects of allocation decisions which are entrusted to the DRBC and which the NRC is precluded from considering. Section 15.1(s)1 of the Delaware River Basin Compact provides, in part:

> Nothing contained in this Act or in the Compact shall impair or affect the constitutional authority of the United States or any of its powers, rights, functions, or jurisdictions under other existing or future legislation in and over the area or waters which are the subject of the Compact including projects of the Commission: provided, that *whenever a comprehensive plan, or any part or revision thereof, has been adopted with the concurrence of the member appointed by the President of the United States, the exercise of any powers conferred by law on any officer, agency or instrumentality of the United States with regard to water and related land resources in the Delaware River Basin shall not substantially conflict with any such portion of such comprehensive plan. . . .* Pub.L. No. 87-328, 75 Stat. 688 (1961) (emphasis added).

The Federal participation necessary to activate the statutory preclusion has occurred.[8]

The salinity intrusion question was specifically raised by Del-Aware in the operating license proceeding as Contention V-16. This contention was rejected by the Licensing Board in its Memorandum and Order of July 14, 1982, on the ground of preclusion.[9] I see no basis to distinguish allegations raised here by Petitioner, from the substance of the contention which was rejected by the Licensing Board, *i.e.*, salinity intrusion. All concerns are directly linked to allocation of Delaware

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[7] The draft reports issued in July 1982 are the Background Report Concerning the Interstate Water Management Recommendations of the Parties to the U.S. Supreme Court Decree of 1954 to the Delaware River Basin Commission Pursuant to Commission Resolution 78-20 and Interstate Water Management — Recommendations of the Parties to the U.S. Supreme Court Decree of 1954 to the Delaware River Basin Commission Pursuant to Commission Resolution 78-20. Although Petitioner's Supplement stated that these documents were attached to it, they in fact were not. The Staff has the documents, however, and has examined them.

[8] *See* Memorandum and Order of July 14, 1982, specifically p. 10, and Memorandum and Order of September 3, 1982 (LBP-82-72, 16 NRC 968) issued by the Atomic Safety and Licensing Board in the Limerick operating license proceeding.

[9] *See* Memorandum and Order, pp. 18-19.

River water and are properly left to the consideration of the DRBC.[10] Preclusion would extend to all of these concerns and, on this basis, I decline to consider claims raised in the Petition regarding them.[11]

I have also declined to consider certain other subject areas which are mentioned in the Petition and its supplementing documents only by passing reference. These subject areas do not appear to be raised as issues, or if they were intended as issues, the issues have not been sufficiently specified to permit my consideration of them.

For example, at p. 9 of the Petition, it is claimed that "Fishing, canoeing, and other recreational pursuits would be hampered by the diversion." No further specificity is provided. Also at p. 6 of the Petition, it is claimed that ". . . the Board did not include . . . transmission lines in its decision or the construction permit." No reference or further particularity is provided. Also, the Supplement to the Petition had attached to it a large number of documents to which no specific reference was made in the Supplement.

Section 2.206(c) requires that Petitioner ". . . set forth the facts that constitute the basis for the request." Absent such a showing, the Director need take no action on the Petition.[12] Consequently, to the extent that I may not have addressed "issues" Petitioner believes have been raised by the Petition and its supplementing documents, it is because the requirement of Section 2.206(c) calling for a factual basis for the Petitioner's request has not been met.[13]

Background

In order to properly assess the Petition's claims that construction permit revocation or suspension is warranted on the basis of changed conditions since the issuance of the construction permits, an examination of the environmental assessments which the Limerick Facility and associated water supply proposals have received is necessary.

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[10] That DRBC is the proper agency for consideration of water allocation questions is evidenced by its active consideration of allocation questions as reflected in the draft documents issued in July 1982. Furthermore, the various DRBC approvals of the PPD Project are conditioned to require operation at all times in accordance with the requirements of the DRBC. It is thus to the DRBC that Petitioner should direct its concerns as it indeed has done by virtue of its "Amended Petition to Reopen and for Reconsideration and, to Set Aside Prior Orders, and to Take Other Action as Appropriate," directed to the DRBC and dated September 13, 1982.

[11] *See* footnote 6, *supra.*

[12] *Public Service Company of Indiana, Inc., and Wabash Valley Power Association, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), DD-79-17, 10 NRC 613, 614-615 (1979) and *Duke Power Company* (Oconee Nuclear Station, Units 1, 2, and 3), DD-79-6, 9 NRC 661-662 (1979); *see also Public Service Company of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, 443 (1980).

[13] In several instances, documents supposedly attached to the Supplement were not provided. To the extent such documents were available to my Staff, they were considered, as were all documents actually provided by Petitioner, in reaching my decision.

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In March 1970, PECO applied to the DRBC for a water allocation permit to provide supplemental cooling water for the proposed Limerick Facility and sought its inclusion in the Comprehensive Plan. The DRBC rendered its decision on PECO's request (DRBC Docket No. D-69-210-CP) in March 1973 stating PECO could draw water from the Schuylkill River, the Perkiomen Creek, and the Delaware River, provided certain conditions were met. Supplemental cooling water could be made available to the Limerick Facility under options including the "river follower" method of operation with no storage, or construction of a storage reservoir. Each of these options involved diverting water from the Delaware River to augment the water supply in the Perkiomen Creek and made use of the already proposed Point Pleasant Diversion. The Point Pleasant Diversion was originally proposed as part of a Neshaminy Water Supply Project to provide water to Central Bucks and Montgomery Counties for public use. This latter project had been added to the DRBC Comprehensive Plan in January 1967 (DRBC Docket No. D-65-76 CP(2)). Following a feasibility study of locating a pumping facility at Point Pleasant, the DRBC, in March 1971, issued a decision adding the Point Pleasant Diversion as an element of the Neshaminy project. (DRBC Docket No. D-65-76 CP(3)).

The same DRBC decision of March 1971 added the Limerick Supplemental Cooling Water Supply system to the Neshaminy project. This system would rely on a portion of the Neshaminy project to link the Delaware River with the East Branch of the Perkiomen Creek. The DRBC conducted a full environmental review and issued in 1973 a final environmental impact statement (FEIS) covering the Limerick SCWS system, the Neshaminy project and the pumping facility at Point Pleasant herein referred to collectively as the Point Pleasant Diversion Project or PPD Project. The FEIS was submitted to the Council on Environmental Quality in February 1973. This document, which included an evaluation of alternative methods of supplying water to the Limerick Facility (as well as to Bucks and Montgomery Counties), concluded that the benefits of the PPD Project exceeded any adverse effects and that the PPD Project was an acceptable alternative for meeting Limerick's supplemental cooling water needs. The DRBC Docket No. D-69-210 CP decision of March 1973 referred to above was issued shortly thereafter. This decision conditionally approved the water supply aspects of the overall Limerick project. A final decision was deferred pending completion of a final environmental impact statement (FES) for Limerick by the Atomic Energy

Commission (AEC).[14] Following issuance of construction permits for the Limerick Facility by the AEC, the DRBC gave final approval in Docket No. D-69-210 (Final) to construction of the Schuylkill River and Perkiomen Creek intake and diversion structures. Approval for construction of those elements of the PPD Project shared by the Limerick Facility and the Neshaminy Water Resources Authority (NWRA) as well as the remaining elements of Limerick's portion of the project was granted in 1980.

In performing its review of the environmental impacts anticipated from the construction and operation of the proposed Limerick Facility, the AEC staff evaluated the DRBC FEIS covering the entire PPD Project, including the portion associated with the Limerick Facility, and concurred in DRBC's conclusion reached in its decision concerning the PPD Project (Docket No. D-65-76 CP(3)) that:

> The proposed Point Pleasant diversion would be beneficial to the Neshaminy and Perkiomen watersheds and would not be detrimental to the Delaware if conditions of operation imposed by the Commission [DRBC] are observed. Decision, I-4.

Testimony by the AEC staff[15] at the construction permit proceeding provided further results of the AEC Staff's environmental review, beyond those presented in the FES. In particular, the Staff examined that portion of the overall economic and environmental cost of constructing and operating the PPD Project which would be attributable to Limerick. (The DRBC had not attempted to apportion these costs in its FEIS). The Staff concluded that the economic cost of the entire PPD Project would be insignificant compared to the total cost of the Limerick Facility. The Staff also concurred in the DRBC finding that the benefits of the PPD Project outweighed the costs. Based on the Staff's FES and testimony at hearings before the Atomic Safety and Licensing Board, the Licensing Board authorized issuance of construction permits for the Limerick Facility.[16]

The authorization of construction permits was challenged on the basis that the environmental assessment of the PPD Project and its alternatives failed to meet the requirements of NEPA.

The Atomic Safety and Licensing Appeal Board, in its decision of March 1975,[17] upheld the Licensing Board authorization of construction permits and

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[14] The Petition suggests that DRBC approvals reflect something less than a full environmental review by DRBC of the particular project being considered and that conditions in the approvals support this claim. (Petition, pp. 35-38). Such is simply not the case. The DRBC FEIS constituted a full environmental review of the PPD Project. To the extent that the DRBC decisions regarding the PPD Project were conditional, they called simply for completion of environmental impact statements by the AEC/NRC regarding the Limerick Facility. Such a statement was prepared at the construction permit stage by the AEC and is being prepared for the operating license stage by the NRC.

[15] Testimony of A. R. Lyle following Tr. 5847.

[16] *Limerick, supra,* 7 AEC 1098.

[17] *Limerick, supra,* 1 NRC 163.

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found that the impacts of the PPD Project were adequately considered and discussed.

The Appeal Board's decision was appealed to the United States Court of Appeals.[18] The Court's decision, rendered in November 1975, denied challenges to the NRC findings in the construction permit proceeding and upheld the Appeal Board's decision in all respects.

In summary, the environmental assessment conducted at the construction permit proceeding regarding the Limerick Facility was substantial and included major participation from DRBC in its role as the responsible entity for water supply and water quality matters related to the Delaware River and its tributaries. That assessment was the subject of adjudicatory proceedings, appeals, and eventual affirmance by the Court of Appeals.

There has been additional review activity relevant to the PPD Project by the DRBC since the Limerick Facility construction permits were issued. In July 1979, the NWRA applied to DRBC for final approval for construction of the Point Pleasant pumping station, the combined transmission main to the Bradshaw Reservoir, and components of the Neshaminy portion of the PPD Project. Subsequently, in August 1979, PECO applied to DRBC for approval for construction of the remaining elements of the SCWS system, *i.e.*, the Bradshaw Reservoir, and the transmission and release facilities to the East Branch of the Perkiomen Creek. The DRBC reviewed updated environmental reports submitted with the PECO and NWRA applications as well as other related documents generated since the DRBC FEIS was issued in 1973. An updated environmental appraisal of the overall PPD Project was prepared in February 1980 based on this review and was circulated for comment. A Final Environmental Assessment was issued in August 1980 which responded to various areas of environmental concern expressed in comments by interested agencies and members of the public. These areas included water quality, impact on aquatic biota, conservation, impact on growth and development, aesthetics, archeological and historic sites and consideration of project alternatives. Based on the findings of the Final Environmental Assessment, the Executive Director of DRBC issued a Negative Declaration on the PPD Project in August 1980.[19] Public hearings on the PPD Project were then held by DRBC, following which approval was granted for the project. (DRBC Docket Nos. D-65-76 CP(5) and D-79-52 CP, February 18, 1981.) This decision was reviewed by the United States District Court and the United States Court of Appeals. The decision of DRBC was upheld by both courts.[20]

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[18] *Environmental Coalition of Nuclear Power, et al.* v. *U.S Nuclear Regulatory Commission, et al.*, No. 75-1421 (3rd Cir. 1975). Unpublished Opinion.

[19] It should be noted that the Point Pleasant intake at the time of this review was a vertical travelling screen design and was located flush with the river bank.

[20] *Delaware Water Emergency Group* v. *Hansler*, 536 F.Supp. 26 (E.D.Pa. 1981). *aff'd mem.*, 681 F.2d 805 (3rd Cir. 1982).

In December 1980, NWRA submitted an application (NAPOP-R-80-0534-3) to the Corps for a permit to construct a water intake structure in the Delaware River at Point Pleasant, pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Federal Water Pollution Control Act (86 Stat. 816, P.L. 95-500). Subsequently, the Corps began an independent environmental assessment of the construction and operational impacts of the proposed project. This assessment, was coordinated with the National Marine Fisheries Service, the Advisory Council on Historic Preservation, the U.S. Fish and Wildlife Service, the Pennsylvania Department of Environmental Resources, the Environmental Protection Agency, and the DRBC. The Corps issued a Public Notice regarding this application in April 1981 and a Notice of Public Hearing in August 1981. A hearing was held on September 15, 1981. In February 1982, a supplement to the original Public Notice was issued describing certain revisions to the project.

On the basis of its review, the Corps issued to NWRA a permit on October 25, 1982 to construct the water intake at Point Pleasant. The Corps also issued a document dated October 14, 1982 summarizing its assessment of the environmental aspects of the permit entitled "Neshaminy Water Resources Authority Point Pleasant Diversion Project, Point Pleasant, Bucks County, Pennsylvania Environmental Assessment." This study includes a discussion of alternative intake sites, and concludes that the Point Pleasant area was an appropriate location for the withdrawal, and that the specific site selected for the intake is the most practicable. The study further concludes that the issuance of the permit will not significantly affect the quality of the human environment, that there are no unresolved conflicts concerning alternative uses of available resources and that no Environmental Impact Statement is required.

During 1981 and early 1982, NWRA and PECO filed a series of applications with the Pennsylvania Department of Environmental Resources (PA DER) for permits authorizing the construction and operation of facilities associated with the PPD Project, pursuant to Section 401 of the Federal Water Pollution Control Act, the Pennsylvania Dam Safety and Encroachments Act, and other statutes. As part of its regulatory responsibilities relevant to these applications, PA DER performed a comprehensive environmental assessment of the entire PPD Project. The document summarizing this review, "Environmental Assessment Report and Findings, Point Pleasant Water Supply Project," (PA DER Environmental Assessment) was issued in August 1982. The assessment gave consideration to the following issues:

1. Need for the Project
2. Impacts on the Delaware River
3. Impacts on North Branch Neshaminy Creek
4. Impacts on East Branch Perkiomen Creek
5. Impacts on the Delaware Canal
6. Water Quality Concerns
7. Blasting Impacts

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8. Archaeological/Historical Impacts
9. Land Use Impacts
10. Wetlands Impacts
11. Alternatives to the Proposed Project

On the basis of its assessment, PA DER concluded that "the public benefits of the Point Pleasant Diversion Project, including provision of public utility services, protection of public health and safety, development of energy generating resources, and improved management of ground and surface water resources in the region, substantially exceed and outweigh any adverse impacts on the environment and public natural resources engendered by the project." All permits applied for by PECO and NWRA were subsequently issued on September 2, 1982. It should be noted that the assessments performed both by PA DER and the Corps of Engineers reflect the current and final configuration of the PPD Project.

The NRC Staff is also currently conducting its operating license environmental assessment for the Limerick facility with a draft environmental statement scheduled for issuance in May of 1983. Consequently, the Limerick Facility and associated cooling water supply proposals have received careful and continued environmental scrutiny from a number of agencies.

Consideration of Issues Raised In the Petition

Suspension or revocation of construction permits may be appropriate based upon substantially changed circumstances. The matter of the appropriateness of suspending construction permits for nuclear facilities based upon alleged changed circumstances has been previously addressed.[21] NEPA does not require that decisions based upon environmental impact statements be reconsidered whenever information developed subsequent to the action becomes available; it is unnecessary for an agency to reopen an NEPA record unless the new information would clearly mandate a change in result.[22] The showing required for reopening a record was articulated in a Director's Decision on the *Marble Hill* matter.

> "In order to have a hearing reopened on the basis of new information, as STV seeks to do, the Appeal Board has held that the new information must identify a significant unresolved safety issue or a major change in facts material to the resolution of major environmental issues. (Footnote omitted.) Although the Director, in considering a request for action under 10 CFR 2.206 is not bound by the Appeal Board's standard for reopening a licensing proceeding on the basis of new information, this standard is

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[21] *Georgia Power Company* (Alvin W. Vogtle Nuclear Plant, Units 1 and 2), DD-79-4, 9 NRC 582 (1979); *Public Service Company of Indiana, Inc., and Wabash Valley Power Association, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), DD-79-10, 10 NRC at 129(1979).

[22] *Vogtle, supra,* 9 NRC at 584-585.

> persuasive in considering requests under 10 CFR 2.206 because, as the Commission has indicated on another occasion, '[P]arties must be prevented from using 10 CFR 2.206 procedures as a vehicle for reconsideration of issues previously decided. . . .' *Consolidated Edison Company* (Indian Point, Units 1-3),CLI-75-8, NRC 173, 177 (1975)."[23]

Settled NRC policy requires that the claims in the Petition urging a revocation or suspension of the construction permits for the Limerick Facility must identify "a major change in facts material to resolution of major environmental issues."

Also relevant to a number of aspects raised in the Petition is the current status of the operating license proceeding under way regarding the Limerick Facility. Del-Aware is a party to this proceeding and has raised a number of issues regarding the SCWS system proposed for the Limerick Facility before the Licensing Board sitting in the operating license proceeding. A number of these issues have been admitted as contentions. To the extent that Del-Aware has raised similar issues in its Petition, I have examined those issues with the understanding that a proper forum for their resolution lies in the operating license proceeding.[24] Nevertheless, I have examined those issues for the sole purpose of determining whether activities presently authorized under the construction permits should be modified since the Licensing Board for the operating license proceeding is without jurisdiction to modify the construction permits.[25]

Other issues raised by Del-Aware in the operating license proceeding have been rejected by the Licensing Board as either beyond the scope of the environmental assessment which NEPA requires the NRC to conduct in furtherance of its regulatory responsibilities or as beyond the jurisdiction of a Licensing Board sitting only to examine impacts associated with the issuance of an operating license. In rejecting such issues, the Licensing Board suggested that certain of:

> ". . . Del-Aware's allegations that changes in construction impacts due to either changes in proposed construction or the changes in recognition of the historical value of areas which may be impacted by construction should be directed as a request for action to the Director of Nuclear Reactor Regulation pursuant to 10 CFR §2.206(a)."[26]

Consequently, in evaluating the concerns identified in the Petition, I have given careful consideration to the rulings made by the Licensing Board in the operating license proceeding in determining which issues are appropriate for my consideration at this time.

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[23] *Marble Hill, supra,* 10 NRC at 130-131.

[24] *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-6, 13 NRC 443 (1981).

[25] *Consumers Power Company* (Midland Plant, Units 1 & 2), ALAB-674, 15 NRC 1101, 1102-1103 (1982).

[26] *Limerick, supra,* LBP-82-43A, 15 NRC 1423, 1478 (1982)

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With these general principles in mind, I have considered the five substantive issues raised in the Petition.

1. The Relationship Between the Neshaminy Water Resources Authority and PECO

Much of the Petition is devoted to an exposition of supposed changed circumstances in the relationship between the NWRA and PECO.

The Petition claims that the sole reason for the proposed construction of the PPD Project is operation of the Limerick Facility. Attached to the Petition is the "Agreement Between the Neshaminy Water Resources Authority and Philadelphia Electric Company for the Construction and Operation of Water Supply Facilities," dated February 12, 1980, which it is claimed supports the view that the PPD Project will have as its sole purpose the provision of supplemental cooling water to the Limerick facility.[27]

The claims in this regard appear to be grounded mainly upon interpretation of PECO's contract with the NWRA for construction of the PPD Project. Mr. Robert A. Flowers, Executive Director of the Neshaminy Water Resources Authority, has prepared an affidavit dated June 10, 1982, wherein he states that:

> NWRA is committed to constructing Neshaminy Water Supply System authorized by docket number D-65-76 CP(8) with or without the Philadelphia Electric Company.[28]

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[27] Relative to this matter, the Petition alleges that information relevant to the relationship between PECO and the NWRA regarding the PPD Project was not disclosed by PECO to the AEC at the time of the construction permit review. The allegations, even if true, were simply not material to the issues before the DRBC and the AEC at that time. The central issue was assurance that all aspects of the PPD Project be assessed for environmental acceptability. This was accomplished through the efforts of the DRBC. To the extent environmental impacts associated with the PPD Project were attributable to the Limerick Facility, those were considered by the AEC. The existence or non-existence of any relationship between PECO and NWRA was not material to these considerations. Consequently, the allegations provide no indication of improper or unlawful withholding of information from the AEC or the NRC.

In addition, the Petition suggests that the SCWS system for the Limerick Facility should be an item explicitly referenced in and subject to the constuction permits issued for this facility. Petition, pp. 2, 30, 34(b). The construction permits in this matter were issued pursuant to the authority of §103 of the Atomic Energy Act of 1954, as amended. (42 U.S.C. 2133.) The permit governs a "utilization facility" which term is defined by the Act. *See* §11(cc). This term includes, exclusively, any equipment or device capable of the production of special nuclear material, or, any important component part especially designed for such equipment or device *as determined by the Commission*. The SCWS system for the Limerick facility clearly does not come within the ambit of "equipment or device[s] capable of production of special nuclear material." Any remaining determination as to what constitutes a utilization facility is, by the terms of the statute, exclusively that of the Commission, and the practice has been to exclude from utilization facilities supplemental cooling water supply systems.

[28] This affidavit was provided to me as an attachment to the September 3, 1982, submittal from PECO titled "Comments of Philadelphia Electric Company on Del-Aware Unlimited's Request for Suspension or Revocation of Construction Permits Pursuant to 10 CFR §2.202 and §2.206(a)."

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Based upon this representation from the Executive Director of the NWRA, I conclude that the Petitioner's allegation that the sole reason for the proposed construction of the PPD Project is to support operation of the Limerick Facility is without merit. In light of Mr. Flowers' Affidavit, it is clear that the commitment of both PECO and NWRA to the PPD Project has not changed materially since issuance of the construction permits.[29]

The Petition suggests that only the ". . . incremental size of the Point Pleasant portion of the SCWS was considered in the application for the construction permit . . . ."[30] Consequently, given the alleged change in relationship that makes the PPD Project supposedly attributable solely to PECO, it is argued the earlier environmental review would be incomplete. Such is not the case. As stated above, the entire PPD Project was environmentally assessed by DRBC and found beneficial. The Staff recognized and accepted this finding by the DRBC, which would weigh in favor of the Limerick Facility for the allocation would be of net benefits.[31] And, of course, as was decided by the Appeal Board at the construction permit stage of this proceeding, the Staff may use the environmental impact statement prepared by DRBC as a basis for its own assessment of the environmental impacts of a proposed action.[32]

2. Possible Suspension or Cancellation of Unit 2

The Petition questions the continued need for the SCWS System proposed for the Limerick Facility in light of the finding by the Pennsylvania Public Utilities Commission (PUC) in its Opinion and Order of August 27, 1982 that ". . . either the cancellation or suspension of construction at Limerick Unit 2 is in the public interest."[33] The Petition at p. 3 and Petitioner's letters of September 3, 1982, and September 23, 1982 allege that, with only one unit in operation, Limerick's supplemental water needs are halved, calling into question the continued need for the proposed SCWS. It should be noted that the August 27, 1982 Opinion and Order does not preclude the completion of construction and the subsequent operation of Limerick Unit 2. Rather, it requires PECO to inform the PUC of its

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[29] The September 17, 1979 letter to Mr. Flowers from PECO attached to Petitioner's September 23, 1982 letter to me does not affect my conclusion. The letter predates Mr. Flowers' Affidavit by nearly three years and, at best, expresses only a hesitancy with respect to the immediate expenditure of funds.

[30] Petition, p. 2.

[31] Lyle Testimony, *supra*, p. 4.

[32] *Limerick, supra*, 1 NRC at 184-189, wherein the Appeal Board confirmed the Staff's approach in using DRBC FEIS findings. Nor is Petitioner's reliance on the *Phipps Bend* decision [*Tennessee Valley Authority* (Phipps Bend Nuclear Plant, Units 1 and 2), ALAB-506, 8 NRC 533 (1978)] appropriate. In this instance, DRBC, a federal agency, is performing a governmental function unlike TVA, the federal agency in *Phipps Bend*, which was performing a proprietary function.

[33] Pennsylvania Public Utility Commission, Limerick Nuclear Generating Station Investigation, I-80100341, Opinion and Order, p. 24.

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decision whether to cancel or suspend the construction of Limerick Unit 2 within 120 days and to undertake other activities, none of which foreclose the eventual completion of Unit 2. The ultimate effectiveness of the PUC decision itself will not be determined until pending appeals are exhausted.

The terms and conditions of the existing DRBC approval for water use at the Limerick Facility are stated in DRBC Docket D-69-210 CP dated March 29, 1973 and DRBC Docket D-69-210 CP (Final) dated November 5, 1975. Restrictions on the withdrawal of Schuylkill River water for consumptive uses at Limerick and on the withdrawal of Perkiomen Creek water were established for both one and two unit operation and are defined in terms of the ambient Schuylkill River water temperature and river flowrate, and on Perkiomen Creek flowrate. Information provided by PECO and reviewed by the DRBC under Docket D-69-210 CP indicates that a supplemental water supply is needed to assure operation of either one or two units at Limerick because river and creek temperatures and flowrates would not permit water withdrawal all year around.

Nor are the environmental impacts associated with construction of the SCWS system affected by the fact that the system may potentially serve only one unit of the Limerick Facility. Consideration was given to construction impacts associated with the PPD Project in the Final Environmental Impact Statement of the DRBC dated February 1973, in the AEC FES of November 1973 (the portion of the PPD Project involving the intake structure on the Perkiomen Creek and the pipeline to Limerick), in the DRBC Environmental Assessment for the Project dated August 1980, in the PA DER Environmental Assessment dated August 1982, and in the Army Corps of Engineers Environmental Assessment dated October 1982. The effects of construction and operation and their impacts were found to be acceptable, subject to limitations imposed either by DRBC, PA DER in its water quality certification and dams and encroachment permits, or the Army Corps in the conditions accompanying its permit. While these studies did not address the environmental impacts of facilities sized for serving only one unit at Limerick, the construction/installation impacts associated with the PPD Project are virtually the same whether the structures are sized for two-unit operation or for one-unit operation. Because about half of the allocated water withdrawal from the Delaware River is for the Neshaminy Water Resources Authority, the change in environmental impacts associated with the difference in physical size between water supply facilities for one unit or two units at Limerick could not be significant.

The U.S. Fish and Wildlife Service (USFWS) has suggested in its letter of September 14, 1982 to the Corps of Engineers that a reduction in the size of the Limerick Facility to one unit would "reduce demands and provide several other less environmentally damaging alternatives to the proposed Point Pleasant Diversion project, such as water storage in the Schuylkill River Basin."[34] Alternatives to the SCWS system were considered in the original DRBC FEIS. Therein the DRBC concluded that the SCWS system was an acceptable alternative for meeting Limerick's supplemental cooling water needs.

Alternatives were also considered by PA DER in its August 1982 assessment and by the DRBC in its Environmental Assessment of August 1980 and the May 1981 Level B Study and Environmental Impact Statement for the Delaware River Basin. PA DER found that the State Water Plan and the DRBC Level B Study both recognize technical, environmental, economic or social conditions that preclude development of significant new surface water storage facilities in the Schuylkill Basin in the foreseeable future. PA DER also found that election of a Schuylkill River alternative for cooling water for Limerick would ignore the need for drinking water supplies for Montgomery County and Bucks County, Pa. The environmental assessments of the DRBC, in preferring the PPD Project to Schuylkill River-based alternatives, stated as reasons the limited opportunities for the development of additional storage to increase the flow of the Schuylkill River, the deterioration of river water quality resulting from increased use and from flood skimming to offstream storage, and the elimination of all benefits to be achieved from the increased flow in Perkiomen Creek as a result of the PPD Project.

The range of alternatives considered in the environmental assessments of the PPD Project included: (1) additional development of groundwater resources; (2) use of existing surface supplies such as City of Philadelphia water supply, Tohickon Creek, Perkiomen Creek, Wissahicon Creek, Susquehanna River, Schuylkill River and Delaware River; (3) creation of new surface water impoundments in both the Delaware and Schuylkill basins; (4) development of independent water supply for PECO, Bucks County and Montgomery County; and (5) no action.

The Corps, in its Environmental Assessment dated October 14, 1982, considered the above-referenced documents and others. It therefore had the benefit of these reviews regarding alternatives to the proposed PPD Project when it issued the permit for the PPD Project intake structure.

In summary, the environmental impacts associated with the construction of the PPD Project have been reviewed and found acceptable subject to certain conditions which have been imposed. There is no indication in the reviews conducted to date that environmental impacts would differ greatly were Limerick a one-unit station. Moreover, even if one unit at Limerick were cancelled, a supplemental water source, such as the SCWS system, would be required for the remaining unit.

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[34] The Corps in its reply to USFWS of September 24, 1982 acknowledged the concerns of USFWS regarding the Point Pleasant Diversion Project but concluded that they were not valid deterrents in this case.

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Alternatives to the PPD Project have also been reviewed. There is no indication in the reviews conducted to date that the environmental impacts associated with alternatives would significantly decrease were Limerick a one-unit station. Alternatives to the PPD Project were considered at the construction permit review of the Limerick Facility and the PPD Project was found acceptable. More recent environmental assessments have confirmed this finding. Even if consideration of alternatives were now appropriate, suggested alternatives such as water storage in the Schuylkill River Basin are not feasible at this time. Thus, I conclude that the possible suspension or cancellation of one of the Limerick units does not require any action to be taken with respect to the current construction permits.

3. Alteration of the Intake for the Point Pleasant Pumping Station

The Petition alleges that the intake for the PPD Project has been substantially altered since the construction permit proceeding and that these changes have not been evaluated. Petition pp. 3, 14-15, and 31. Effects on aquatic biota are alleged and concerns raised regarding the effects of construction, such as additional blasting, on residents. The Supplement to the Petition at pp. 3-4 claims that the DRBC Environmental Assessment of August 1980 did not examine the final Project intake configuration and that a report prepared for the Corps in January 1981 by Betz-Converse-Murdock, Inc. identified the wetlands near the Project intake as an area requiring further study.

The design of the intake structure in the Delaware River has been changed since the time of the AEC construction permit proceedings. The DRBC Environmental Assessment of August 1980 did not evaluate the intake as presently located and designed. At that time the intake structure was located flush with the river bank and employed vertical travelling screens for fish and debris removal as well as a dredged channel from the shoreline to the main river channel for water supply. This structure was reviewed by the DRBC in its February 1973 Environmental Impact Statement and August 1980 Environmental Assessment.

In 1981, the intake structure was changed to an in-river structure employing submerged passive wedge-wire screens located about 200 feet offshore, eliminating the need for the dredged channel. The new design was proposed by NWRA and was believed to represent a more advanced technology with less potential for adverse environmental impact. The details of the design were presented in a Public Notice issued by the Corps of Engineers dated April 6, 1981. Revisions to the proposed placement of the structure itself and its associated piping were presented in another Public Notice issued by the Corps on February 9, 1982. The most significant of the changes proposed was the movement of the intake structure an additional 45 feet further into the river to place the structure in the main channel.

However, the present design and location of the Project intake structure have not gone unreviewed. PA DER in its Environmental Assessment of August 1982

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included consideration of the necessary blasting for placement of the structures in the river and for the pipeline to the Bradshaw Reservoir. The PA DER assessment noted that the proposed NWRA blasting specifications for the construction of the PPD Project were well within the criteria set by the DRBC's consultant. These criteria were used to judge adequacy for safety and protection of nearby structures and environmental features in the DRBC Environmental Assessment of August 1980. The PA DER assessment concluded that the blasting limits and procedures proposed by the NWRA would be adequate to avoid damage to the locks and channel of the Delaware Canal and other nearby structures. Accordingly, the September 2, 1982 PA DER Water Obstruction and Encroachment Permit granted to NWRA for the construction and maintenance of the PPD Project intake structure in the Delaware River, intake conduit crossing under the Delaware Canal and other related structures has been conditioned to require construction in accordance with "Appendix B — Point Pleasant Project Blasting Requirements from the Delaware River to Pumping Station," of the August 1982 PA DER Environmental Assessment. Construction blasting impacts associated with the PPD Project intake structure have thus received explicit consideration by both DRBC and PA DER. PA DER also assessed the wetlands issue. Its approval to construct and maintain the Project intake is conditioned, in part, to control impact to wetlands by minimizing wetlands lost to the smallest area practicable and by restoring affected wetlands to pre-construction conditions as provided in plans submitted to the PA DER.

In addition, the current design and location of the intake have been reviewed and the potential for adverse environmental impacts has been assessed by the Corps of Engineers in its Environmental Assessment of Application No. NAPAP-R-80-0534-3 dated October 14, 1982, prepared pursuant to the Corps' responsibilities under Section 404 of the Federal Water Pollution Control Act and under NEPA. This Environmental Assessment considered the need for the proposed project; potential construction impacts due to noise, air pollution, canal dewatering between Locks 13 and 14, wetlands appropriation and disturbance, in-water blasting and construction activity, injury or loss of historic and cultural properties, and traffic disruption; and potential operational impacts due to entrainment or impingement losses of shortnose sturgeon and other aquatic organisms, withdrawal of river water under low flow conditions, and adverse effects on downstream Delaware River water quality regarding chloride ion levels and dissolved oxygen levels. A major conclusion of the Corps' assessment is that wetlands in the area of the Project intake are not unique with respect to the floodplain forests of southeastern Pennsylvania and that some loss, with controlled disturbance and restoration of grade, is environmentally acceptable.

The Corps found in this assessment that the construction and operation of the PPD Project intake structure as presently designed and located will not significantly affect the quality of the human environment, and that no Environmental Impact

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Statement need be prepared in regard to the issuance of the Department of the Army permit for the intake. The DRBC participated with the Corps in the preparation of this assessment.[35] The Corps issued permit NAPOP-R-80-534-3 on October 25, 1982 to NWRA for "Construction of a Water Intake Structure in the Delaware River/Delaware Canal at Point Pleasant, Bucks County, Pa."

Concerns raised in the Petition and its Supplement regarding the effect of the intake structure on the shortnose sturgeon and American shad have also been the subject of the NRC Staff review. With respect to both the shortnose sturgeon and the American shad, the Staff reviewed their known distribution in the Delaware River, the species' life history and behavior, the location of the proposed Point Pleasant pumping station, and the design and operating characteristics of the proposed intake. The Staff concluded that operation of the intake will not jeopardize the continued existence of these species in the Delaware River. Specifically considered by the Staff were entrainment of larvae, impingement of juveniles, denial of use of critical habitat and alteration of turbidity immediately downstream of the intake. In addition, the effect of pool drawdown on the American shad was considered.

In light of the careful consideration given to the modified intake structure by both PA DER, the Corps of Engineers, and the NRC Staff, including specific consideration of the concerns raised in the Petition and its supplementing documents, assertions that these matters have not been evaluated are without merit.

4. Effect of the PPD Project upon Cultural Resources

The Petition and its supplementing documentation claim that construction and operation of the Point Pleasant Division Project would adversely affect the cultural resources of the proposed Point Pleasant Historic District, the Delaware Division of the Pennsylvania Canal, which is a National Historic Landmark, and an Indian archaeological site. *See* Petition, pp. 5, 15; Petitioner's letter of September 3, 1982.

These cultural resources may be briefly described as follows. The Point Pleasant Historic District was declared eligible for inclusion in the National Register of Historic Places by the Keeper of the Register on December 29, 1981. The District is described as representing "a significant resource relating to community develop-

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[35] The DRBC continuing overview of the PPD Project is reflected in a letter to the USNRC dated September 14, 1982: "...In the event that review by other State and Federal agencies results in a modification to the operation or the design of this project, DRBC has so conditioned this docket to allow a reopening, reconsideration, and revision of this project approval as necessary."

ment history of 18th century English settlements in Pennsylvania," and as providing a "strong sense of time and place."[36]

The Delaware Division of the Pennsylvania Canal was constructed in the first third of the nineteenth century and was used as a connecting link with the Lehigh Canal for transporting coal to Philadelphia and New York. Many of the lock houses and other related structures remain intact. With regard to the archaeological site, archaeological remains were identified in the Point Pleasant area at the end of the last century and surveys have been conducted in the general area since then.[37]

These three cultural resources could be adversely affected by the construction of the intake structure, pumping station and piping associated with this portion of the PPD Project.[38] The District could be affected aesthetically by the Project's design and by areas being disturbed during Project construction. The Canal could be affected by the blasting and trenching activities required for construction. The potential also exists that unidentified archaeologic sites may be damaged by normal construction activities associated with these elements of the PPD Project. The possible adverse impacts to cultural resources in these areas have been identified by the Corps of Engineers, which is the appropriate permit-issuing agency. Following proper procedures, the Corps consulted with the State Historic Preservation Officer (SHPO) for Pennsylvania and sought comments from the Advisory Council on Historic Preservation (ACHP). The Corps then drew up a Memorandum of Agreement (MOA), between itself, the SHPO, and the ACHP. The MOA states that ". . . it is mutually agreed that the undertaking will be implemented in accordance with the following stipulations to avoid, minimize, or mitigate the adverse effects on the above mentioned properties." The MOA contains stipulations concerning the Canal, the Point Pleasant Historic District, and archaeology.[39]

According to the MOA, the possible impacts to the District are to be mitigated by having the Project's designs, plans and specifications approved by the SHPO prior to construction. A landscaping plan approved by the SHPO is also required and there is a stipulation requiring all areas disturbed to be restored as closely as possible to their original appearance.

With regard to the concern raised in the Supplement to the Petition to the effect that no consideration had been given to aesthetic impacts of the pumping station structure in the environmental assessments conducted to date, Petitioner is

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[36] Statement of Significance: Point Pleasant Historic District Attachment to letter from Larry E. Tise, Pennsylvania State Historic Preservation Officer to Lt. Col. Roger L. Baldwin, District Engineer of the Corps, Philadephia District, dated September 21, 1981.

[37] Letter dated April 8, 1982 from Dr. Richard H. Jordan and Glenn Sheehan to Ms. Cathy Auerbach.

[38] To the extent that the Petition seeks consideration of operational impacts associated with these elements of the PPD Project, the operating license proceeding is the proper forum for these considerations. *See Diablo Canyon*, CLI-81-6, *supra*.

[39] The MOA was executed by the Corps, the SHPO and the ACHP in September 1982.

directed to the Corps Environmental Assessment wherein this matter was specifically addressed. Furthermore, the Corps had before it the views of the SHPO on this matter contained in a September 28, 1981 letter to the Corps wherein the SHPO concluded that ". . . the proposed pumping station structure and attendant landscaping is consistent with its surroundings."

The MOA also mitigates the potential impacts on the Canal by requiring blasting activities to be implemented in accordance with the requirements of PA DER. Records of cross-sections and other Canal construction information recorded through appropriate photographs and drawings will be required during trenching operations and before blasting or laying of pipeline to assure restoration of the Canal, towpath, and adjacent areas as closely as possible to their original appearance. The MOA also states that care must be taken to minimize machinery disturbance during construction in the vicinity of the Canal in accordance with the requirements of the PA DER.

There are two stipulations with regard to archaeology. The first describes the required archaeological testing program to be conducted in consultation with the SHPO and the Pennsylvania State Archaeologist to identify sites which might be disturbed by construction. The second stipulation requires that measures will be taken to avoid, preserve, or recover resources if significant archaeological resources are identified.

In summary, the areas identified by the Petitioner have been the subject of the MOA between the Corps and the SHPO and ACHP. The MOA demonstrates that proper procedures have been followed with regard to the resources discussed above and that a consensus was reached with regard to activities required to minimize adverse impacts. In light of these facts, I see no basis to take any further action with respect to cultural and historical resources.

5. Impairment of Water Quality

The Petition claims at p. 4 that the PPD Project would impair the quality of water for drinking and commercial uses. A specific concern raised in Petitioner's September 3, 1982 letter is that various toxic substances recently identified in the Delaware River water would be transported into the Neshaminy and Perkiomen Creeks. Also of concern was alleged contamination of groundwater by losses from the SCWS system through seepage and leakage. *See* Petition, pp. 16, 25 and 33.

Water diverted from the Delaware River by the PPD Project for the Limerick Facility would be used for cooling purposes and would not be consumed by workers or residents. Water subsequently discharged to the Schuylkill River from the facility would not be consumed without adequate treatment.

The water quality of the Delaware River in the vicinity of the PPD Project intake has previously been reviewed and assessed against the protected water uses

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established for the Delaware River, and the Perkiomen Creek system (*i.e.*, agricultural, industrial and municipal supplies; wildlife, fish and other aquatic life; recreation; navigation; waste assimilation, and other uses provided by the DRBC's Comprehensive Plan).

The DRBC Environmental Assessment of August 1980 concluded that the water quality of the Delaware River near the PPD Project intake is generally good. Diversion of river water to the Perkiomen and Neshaminy watersheds was predicted to improve water quality in these watersheds. The differences in the chemical makeup of the waters to be mixed were judged not to be of significant magnitude to produce major changes in stream water quality. The DRBC concluded that adverse impacts on water quality in the service area of NWRA and in the Delaware River would be minimal as a result of the PPD Project.

The PA DER in 1978 assessed the raw water quality of the Delaware River, Pine Run and the North Branch Neshaminy Creek and found that these water bodies are all of satisfactory quality to be used for water supply. This assessment also concluded that the PPD Project will not jeopardize public water supply. As noted above, the DRBC Environmental Assessment dated August 1980 agreed with this conclusion.

The PA DER Environmental Assessment dated August 1982 again assessed the effects of the PPD Project on the water quality of the Delaware River, the North Branch Neshaminy Creek, Lake Galena and East Branch Perkiomen Creek. The assessment was based on bacteriological and physical water quality parameters, inorganic chemicals, heavy metals, organic chemicals, EPA-identified priority pollutants and specific carcinogens such as trihalomethanes and trichloroethylene. The review included data collected between September 1971 and December 1981. The assessment concluded that: (1) the PPD Project will not compound existing water quality problems in the Delaware and Raritan Canal (used for water supply in New Jersey); (2) the PPD Project will not have significant effects on dissolved oxygen, trace organics or suspended solids in the upper Delaware estuary (used for water supply by the City of Philadelphia) nor will it significantly affect the assimilative capacity of the river or estuary (which serves commercial users); (3) the PPD Project will not affect the presently nondetectable trihalomethane levels in the river raw water supply for the City of Trenton or in the North Branch Neshaminy Creek water supply for Philadelphia Suburban Water Company and; (4) there is no substantial evidence that the PPD Project would result in the transfer of toxic substances causing contamination of the Neshaminy or Perkiomen watersheds.

With respect to groundwater contamination from pipeline leakage and reservoir seepage, both PECO and NWRA have indicated in their environmental reports to the NRC and the DRBC that the pumping facilities and the water transmission pipelines have been sized to account for an estimated 10% maximum in-transit water loss while reliably delivering up to about 42 MGD to the Limerick Facility

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and 44 MGD to NWRA's Water Treatment Plants. The water loss associated with the Limerick Facility has been estimated to be up to 4.6 MGD, but this loss has not been specifically apportioned between the various conceivable causes (*i.e.*, pipeline leakage, reservoir seepage, reservoir surface evaporation, Perkiomen Creek system seepage loss or Perkiomen Creek system surface evaporation). However, recognition of in-transit losses has been made in a qualitative sense by the DRBC in its assessment and approval of the PPD Project. In the DRBC Docket No. D-79-52 CP Proceedings, dated February 18, 1981, in-transit water loss was recognized as possibly coming from seepage through the Bradshaw Reservoir boundary and from transmission pipeline leakage. With regard to the former pathway, the Proceedings note the proposed use of impervious soil for the water-side of the dike walls and use of impervious soil or compacted materials from offsite for the reservoir bottom. With regard to the latter pathway, the DRBC conditioned approval of the Project includes the following requirement:

> The applicant shall develop a program to monitor all water supply facilities including storage and distribution systems for leakage. The program must be approved by the Executive Director and the monitoring results shall be submitted within six months of this approval and thereafter as requested by the Commission. The applicant shall proceed expeditiously to correct leakages identified by the monitoring.

The potential for contamination of groundwater by seepage from the Bradshaw Reservoir was assessed in the PA DER Environmental Assessment of August 1982. The assessment took note of the use of a clay liner for the reservoir, tight rock formations in the site area, low transmissivity of the local rock formations, relatively high groundwater table in the area, the lack of wells, septic systems, structures or springs within the maximum probable area of influence of the reservoir, and the lack of evidence of the presence of toxic or priority pollutants in the Delaware River water supplying the reservoir. The assessment concluded that whatever limited seepage there would be from Bradshaw Reservoir would have no measurable effect on the quality of groundwater in the area. Since that time, PECO has further developed the specific plans and specifications for the Bradshaw Reservoir. In its September 3, 1982 letter to the NRC, PECO has stated its intention to install an impervious liner on the reservoir bottom and has estimated reservoir seepage, using conservative assumptions. The liner would be a minimum of two feet thick, with a maximum permeability of 0.014 ft/day.

With respect to the sections of the Perkiomen Creek system to be affected by the PPD Project, these have not been identified as groundwater recharge streams in the assessments conducted to date. Furthermore, these sections appear to be perennial in their flow, which further supports the conclusion that they are effluent rather than influent streams. Consequently, groundwater contamination would not be likely to occur from stream travel in-transit water losses associated with the PPD Project. Also, the quantity of flow to be diverted into East Perkiomen Creek has not changed since the Construction Permit Stage; hence no changes in impacts on the East Perkiomen are expected as a result of modifications to the Project design. Finally, stream or reservoir surface evaporation does not represent a mechanism for groundwater contamination.

The water transmission system description as presented by PECO and NWRA in their environmental reports shows that the in-transit water loss estimate was meant to be a reasonable upper bound estimate and was prepared before the decision was made to use an impervious liner for the Bradshaw Reservoir. The subsequent decision to install the liner, the resulting low estimated seepage rate, the PA DER assessment that the Bradshaw Reservoir seepage will not have any measurable effect on nearby groundwater quality and the DRBC requirement to monitor all of the SCWS water supply facilities for leakage and expeditiously correct such leakage, leads to the conclusion that the potential impact of the PPD Project for groundwater contamination has been carefully considered in previous environmental assessments of the Project. On this basis, I decline to taken any action on the matter of water quality.

Conclusion

Based on the foregoing discussion of Petitioner's allegations, I find no reason to disturb the construction permits issued for the Limerick Facility. The Petition has failed to identify major changes in facts material to the resolution of major environmental issues properly before the NRC. Therefore, I have determined that Petitioner's requests that PECO be compelled to submit an alternative SCWS system and that construction of the planned PPD Project be barred should be denied.[40]

A copy of this decision will be placed in the Commission's Public Document Room located at 1717 H Street, NW, Washington, D.C. 20555. A copy of this

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[40] With respect to the condition of the construction permits to which the Petition refers (at pp. 38-39) and which relates to reporting by the licensee of significant adverse environmental impacts, my review of the many studies examining the environmental impacts associated with the Limerick Facility and the SCWS System leads me to conclude that the licensee has satisfied that condition to date. Also, in the absence of any sound basis for delaying the commencement of construction of the PPD Project now scheduled for December 15, 1982, Petitioner's arguments in its Supplement at pp. 10-11 that construction need not commence by that date in order to ensure timely completion of the Limerick Facility are irrelevant.

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decision will be filed with the Office of the Secretary of the Commission for its review in accordance with 10 CFR 2.206(c) of the Commission's regulations.

Edson G. Case, Deputy Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 7th day of December, 1982.

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Foreword

Digests and indexes for issuances of the Commission (CLI), the Atomic Safety and Licensing Appeal Panel (ALAB), the Atomic Safety and Licensing Board Panel (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions of Rulemaking are presented in this document. These digests and indexes are intended to serve as a guide to the issuances.

Information elements common to the cases heard and ruled upon are:

- Case name (owners of facility)
- Full text reference (volume and pagination)
- Issuance number
- Issues raised by appellants
- Legal citations (cases, regulations, and statutes)
- Name of facility, Docket number
- Subject matter of issues and/or rulings
- Type of hearing (for construction permit, operating license, etc.)
- Type of issuance (memorandum, order, decision, etc.).

These information elements are displayed in one or more of five separate formats arranged as follows:

1. Case Name Index

The case name index is an alphabetical arrangement of the case names of the issuances. Each case name is followed by the type of hearing, the type of issuance, docket number, issuance number, and full text reference.

2. Digests and Headers

The headers and digests are presented in issuance number order as follows: the Commission (CLI), the Atomic Safety and Licensing Appeal Panel (ALAB), the Atomic Safety and Licensing Board Panel (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions for Rulemaking.

The header identifies the issuance by issuance number, case name, facility name, docket number, type of hearing, date of issuance, and type of issuance.

The digest is a brief narrative of an issue followed by the resolution of the issue and any legal references used in resolving the issue. If a given issuance covers more than one issue, then separate digests are used for each issue and are designated alphabetically.

3. Legal Citations Index

This index is divided into four parts and consists of alphabetical or alphanumerical arrangements of Cases, Regulations, Statutes, and Others. These citations are listed as given in the issuances. Changes in regulations and Statutes may have occurred to cause changes in the number or name and/or applicability of the citation. It is therefore important to consider the date of the issuance.

The references to cases, regulations, statutes, and others are generally followed by phrases that show the application of the citation in the particular issuance. These phrases are followed by the issuance number and the full text reference.

4. Subject Index

Subject words and/or phrases, arranged alphabetically, indicate the issues and subjects covered in the issuances. The subject headings are followed by phrases that give specific information about the subject, as discussed in the issuances being indexed. These phrases are followed by the issuance number and the full text reference.

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This index consists of an alphabetical arrangement of facility names from the issuance. The name is followed by docket number, type of hearing, date, type of issuance, issuance number, and full text reference.

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CLI-82-12 METROPOLITAN EDISON COMPANY (Three Mile Island Nuclear Station, Unit No. 1), Docket No. 50-289; RESTART; July 16, 1982; ORDER

A The Commission denies a request by the Appeal Board for authority to hear three safety issues raised by the Board sua sponte, and decides that the issues will be dealt with by the staff and the Commission outside the context of this adjudicatory proceeding.

CLI-82-12A PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Dockets 50-275-OL, 50-323-OL; OPERATING LICENSE; March 18, 1982; DECLINATION OF REVIEW

CLI-82-13 METROPOLITAN EDISON COMPANY, et al. (Three Mile Island, Unit 1), Docket No. 50-289; RESTART; July 16, 1982; ORDER

A The Commission denies a motion by the licensee asking the Commission to decide expeditiously whether (1) it intends to prepare a supplemental environmental impact statement (SEIS) on psychological health effects associated with the operation of this facility in accordance with the decision in PANE v. NRC, No. 81-1131 (D.C. Cir., May 14, 1982), and if so, (2) to proceed expeditiously with its preparation and circulation, and (3) to decide that no hearing would be permitted on the SEIS. The Commission determines that it does not at present have enough information to decide whether the terms of the court's decision require the preparation of an SEIS.

CLI-82-14 SOUTHERN CALIFORNIA EDISON COMPANY (San Onofre Nuclear Generating Station, Units 2 and 3), Docket Nos. 50-361-OL, 50-362-OL, OPERATING LICENSE; July 16, 1982; ORDER

A On the basis of its immediate effectiveness review pursuant to 10 CFR 2.764(f), the Commission concludes that resolution of the issues covered by the Licensing Board's decisions in this operating license proceeding (LBP-82-3, 15 NRC 61 (1982); LBP-82-39, 15 NRC 1163 (1982); LBP-82-46, 15 NRC 1531 (1982)) does not present the type of safety problem which would require a further stay of their effectiveness, and decides that these decisions may go into effect. The license authorized is made subject to the condition that for operation above 5% of rated power to continue beyond six months from the date of issuance of the full-power license, the offsite medical arrangements issue retained by the Licensing Board in LBP-82-39 must be resolved or further operation above 5% must be justified under 10 CFR 50.47(c)(1). The Commission explains that its decision does not authorize issuance of the requested full-power license for Units 2 and 3 of this facility and further that they will not be issued until the staff has briefed the Commission on other, uncontested, issues and the Commission has voted on whether to authorize the licenses.

CLI-82-15 CONSOLIDATED EDISON COMPANY OF NEW YORK (Indian Point, Unit 2) and POWER AUTHORITY OF THE STATE OF NEW YORK (Indian Point, Unit 3), Docket Nos. 50-247, 50-286; SPECIAL PROCEEDING; July 27, 1982; MEMORANDUM AND ORDER

A Upon consideration of a series of pleadings by licensees concerning the Commission's plan to conduct a discretionary hearing on the possible suspension of Units 2 and 3 of the Indian Point facility, the Commission denies: (1) an appeal by a licensee from the order of the Licensing Board (established at the direction of the Commission to determine, inter alia, the issues which the forthcoming hearing are to address) admitting certain intervenors to the hearing; (2) a petition by a licensee for directed certification of its request for stay or dismissal of the proceeding; and (3) a petition by the two licensees for directed certification of their charges that the Board exceeded or misapplied its jurisdiction in admitting contentions. The Commission, inter alia, provides further guidance on the admission of contentions and the formulation of issues for hearing, and remands the matter to the Board for expeditious reconsideration of its rulings on the admissibility of the contentions in light of the additional guidance.

B There is nothing in 10 CFR 2.714 or the case law interpreting that rule which permits licensing boards to exclude certain groups from a licensing proceeding because of their opinions on nuclear power, either generally or as related to certain plants, or because of their conduct outside the proceeding.

C The Commission has an inherent supervisory power over the conduct of its adjudicatory proceedings, including the authority to provide guidance on the admissibility of contentions before licensing boards. See Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 516-17 (1977); United States Energy Research and Development Administration (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 75-76 (1976).

CLI-82-16 BOSTON EDISON COMPANY (Pilgrim Nuclear Power Station), Docket No. 50-293 (EA-81-63), OPERATING LICENSE MODIFICATION; July 30, 1982; ORDER

A The Commission denies a petition by the Attorney General of Massachusetts for a hearing and intervention on an order of the NRC Office of Inspection and Enforcement modifying the operating license for this facility, on the ground that the petition presents concerns outside the scope of the proceeding.

B Section 189a of the Atomic Energy Act does not provide a non-discretionary right to a hearing on all issues arguably related to an acknowledged enforcement problem without regard to the scope of the enforcement action actually proposed or taken by the Commission. In order to obtain leave to intervene in an NRC proceeding, a petitioner must demonstrate an interest affected by the licensing action, as required by 10 CFR 2.714. BPI v. Atomic Energy Commission, 502 F.2d 424 (D.C. Cir. 1974).

C The Commission may limit the issues in enforcement proceedings to whether the facts as stated in the order are true and whether the remedy selected is supported by those facts. Public Service Co. of Indiana (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, 441-42 (1980).

CLI-82-17 LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station, Unit 1), Docket No. 50-322-OL; OPERATING LICENSE; July 30, 1982; ORDER

A In response to a request by counsel for the applicant, the Commission directs that applicant's and intervenor's counsel be given access to those portions of the Appeal Board's opinion in the Diablo Canyon operating license (physical security) proceeding (ALAB-653) (Restricted) dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders, subject to the prior deletion of any classified information contained therein and the execution of appropriate non-disclosure affidavits. In response to a further request by intervenor's counsel for access by intervenor's consultants and for access to the entire Diablo Canyon security file, the Commission: (1) refers the request for access by intervenor's consultants to the Licensing Board with a direction to authorize access only upon a showing of need; and (2) denies access to the other portions of the opinion and the underlying record in the absence of a showing of need for such access.

CLI-82-18 CONSUMERS POWER COMPANY (Palisades Nuclear Power Facility), Docket No. 50-255-SP, VACATION OF DECISION; July 30, 1982; MEMORANDUM AND ORDER

A The Commission vacates on grounds of mootness the Appeal Board's and the Licensing Board's earlier decisions (ALAB-670, 15 NRC 493 (1982); LBP-81-26, 14 NRC 247 (1981)) concerning the holding of a hearing on a confirmatory order by the Director of the Office of Inspection and Enforcement restricting licensed operator overtime work at Palisades.

B Under established NRC practice, unreviewed judgments are vacated when their appellate review becomes unavailable because of mootness. See, e.g., Boston Edison Company (Pilgrim Nuclear Power Station, Unit 2), ALAB-656, 14 NRC 965 (1981); Rochester Gas & Electric Corp. (Sterling Power Project, Nuclear Unit No. 1), ALAB-596, 11 NRC 867 (1980).

CLI-82-19 PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-275-OL, 50-323-OL; PHYSICAL SECURITY; July 30, 1982; ORDER

A In response to a motion by the representative of an interested state requesting that portions of ALAB-653 (Restricted) and his petition for review of that decision which do not contain protected information be made public, the Commission releases versions of both documents with all protected information deleted. The Commission determines that the meaning of "several" as used in the design basis threat of 10 CFR 73.1(a)(1) is safeguards information under Section 147 of the Atomic Energy Act.

CLI-82-20 CINCINNATI GAS AND ELECTRIC COMPANY, et al. (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), Docket No. 50-358; OPERATING LICENSE; July 30, 1982; ORDER

A The Commission directs the Licensing Board to dismiss certain contentions from this operating license proceeding which the Board admitted as Board issues pursuant to its sua sponte authority under 10 CFR 2.760a.

B After the record is closed in an operating license proceeding, where parties proffering new contentions do not meet the legal standards for further hearings, that the contentions raise serious issues is insufficient justification to reopen the record to consider them as Board issues when they are being dealt with in the course of ongoing NRC investigation and staff monitoring.

CLI-82-21 KERR-McGEE CORPORATION (West Chicago Rare Earths Facility), Docket No. 40-2061; MATERIALS LICENSE AMENDMENT; August 6, 1982; ORDER

A The Commission delegates to the Director of the Office of Nuclear Material Safety and Safeguards (NMSS), or such NMSS Branch Chief or above as he may designate, the authority to conduct an informal adjudicatory proceeding on petitioner's contentions concerning licensee's application for an amendment to its 10 CFR Part 40 materials license authorizing it to perform certain work at its now-inactive thorium ore milling facility. The Commission additionally sets forth the parties to the informal proceeding and the procedures by which it will be conducted.

B A petitioner is not entitled, under either the Atomic Energy Act or NRC regulations, to a formal, trial-type hearing on materials licensing actions. Kerr-McGee Corp. (West Chicago Rare Earths Facility), CLI-82-2, 15 NRC 232 (1982).

CLI-82-22 UNITED STATES DEPARTMENT OF ENERGY, PROJECT MANAGEMENT CORPORATION, TENNESSEE VALLEY AUTHORITY (Clinch River Breeder Reactor Plant), Docket No. 50-537 (Exemption request under 10 CFR 50.12); CONSTRUCTION PERMIT EXEMPTION; August 12, 1982; MEMORANDUM AND ORDER

A The Commission considers a petition by intervenors for investigation into allegations that Applicants attempted to conceal certain crucial safety information from the Commission in connection with their application for a license for the Clinch River Breeder Reactor Plant. Upon review of the response of the Department of Energy to the allegations and to certain questions earlier posed by the Commission, the response of the NRC Staff to questions separately addressed to it, and the response of the intervenors, the Commission concludes that the allegations are without foundation. The Commission, therefore, denies the petition for investigation.

CLI-82-23 UNITED STATES DEPARTMENT OF ENERGY, PROJECT MANAGEMENT CORPORATION, TENNESSEE VALLEY AUTHORITY (Clinch River Breeder Reactor Plant), Docket No. 50-537 (Exemption request under 10 CFR 50.12); CONSTRUCTION PERMIT EXEMPTION; August 17, 1982; MEMORANDUM AND ORDER

A The Commission grants in part and denies in part the Department of Energy's request for an exemption pursuant to 10 CFR 50.12 from the provision of 10 CFR 50.10(c) prohibiting the commencement of certain site or construction work prior to obtaining a construction permit or Limited Work Authorization. The Commission authorizes the applicants to conduct non-safety related site preparation activities in connection with the Clinch River facility but denies the exemption request as it pertains to safety-related activities.

B 10 CFR 50.10(c) generally prohibits any person from clearing or excavating a nuclear power reactor site or otherwise commencing construction of a nuclear power reactor until a construction permit or a limited work authorization has been obtained following the holding of an adjudicatory hearing.

C 10 CFR 50.12(a) provides for the case-by-case granting of exemptions from the prohibition of 10 CFR 50.10(c) if specified criteria are met.

D The Commission may apply 10 CFR 50.12 to a "first of a kind" project: there is no indication in the regulations or past practice that exemptions for conduct of site preparation activities are to be confined to typical, commercial light water nuclear power reactors or that an exemption can be granted only if a limited work authorization under 10 CFR 50.10(e)(1) and (2) ("LWA-1") can also be granted or only if justified to meet electrical energy needs.

E The common-law rules regarding res judicata do not apply, in a strict sense, to administrative agencies.

F Res judicata need not be applied by an administrative agency where there are overriding public policy interests which favor relitigation.

G When an agency decision involves substantial policy issues, an agency's need for flexibility outweighs the need for repose provided by the principle of res judicata.

H A change in external circumstances is not required for an agency to exercise its basic right to change a policy decision and apply a new policy to parties to whom an old policy applied.

I An agency must be free to consider changes that occur in the way it perceives the facts, even though objective circumstances remain unchanged.

J For there to be any right to a hearing under Section 189a. of the Atomic Energy Act on the grant of an exemption, such a grant must be part of a proceeding for the granting, suspending, revoking, or amending of a license or construction permit under the Atomic Energy Act.

K The Atomic Energy Act does not require a license or a construction permit, or an adjudicatory hearing, on site preparation activities.

L The Commission is not required by NEPA to hold formal hearings on site preparation activities because NEPA did not alter the scope of the Commission's jurisdiction under the Atomic Energy Act. Gage v. United States Atomic Energy Commission, 479 F.2d 1214, 1220 n.19 (D.C. Cir. 1972); 39 Fed. Reg. 14506, 14507 (April 24, 1979).

M 10 CFR 50.12(a) provides that any exemption from the licensing requirements of 10 CFR Part 50 must be authorized by law, not endanger life or property or the common defense and security, and be in the public interest. For an exemption from 10 CFR 50.10, the Commission considers the public interest by weighing the factors set out in 10 CFR 50.12(b).

N An exemption from Commission regulations must be consistent with the Atomic Energy Act, the National Environmental Policy Act, and other applicable law.

O The limited work authorization procedure under 10 CFR 50.10(e)(1) and (2) ("LWA-1") and the 10 CFR 50.12(b) exemption procedure are independent avenues for applicants to begin site preparation in advance of receiving a construction permit.

P The National Environmental Policy Act (NEPA) requires that the Commission prepare an environmental impact statement only for major actions significantly affecting the environment.

Q A federal agency may consider separately under NEPA the different segments of a proposed federal action under certain circumstances. Where approval of the segment under consideration will not result in any irreversible or irretrievable commitments to remaining segments of the proposed action, the agency may address the activities of that segment separately.

R The public interest criterion for granting an exemption from 10 CFR 50.10, under 10 CFR 50.12(b), is a stringent one: exemptions of this sort are to be granted sparingly and only in extraordinary circumstances.

CLI-82-24 CONSOLIDATED EDISON COMPANY OF NEW YORK (Indian Point, Unit 2) and POWER AUTHORITY OF THE STATE OF NEW YORK (Indian Point, Unit 3), Docket Nos. 50-247, 50-286, SPECIAL PROCEEDING; September 15, 1982; ORDER

A Following the resignation of the Chairman of the Licensing Board for this special proceeding, the Commission, pursuant to 10 CFR 2.721(b), by a 3-2 vote, reconstitutes the Licensing Board.

CLI-82-25 CONSOLIDATED EDISON COMPANY OF NEW YORK (Indian Point, Unit 2) and POWER AUTHORITY OF THE STATE OF NEW YORK (Indian Point, Unit 3), Docket Nos. 50-247, 50-286; SPECIAL PROCEEDING; September 17, 1982; ORDER

A The Commission responds to several questions certified to it by the Licensing Board that seek clarification of previous guidance provided by the Commission on the conduct of this special proceeding.

CLI-82-26 TENNESSEE VALLEY AUTHORITY (Browns Ferry Nuclear Plant, Units 1, 2 and 3), Docket Nos. 50-259-OLA, 50-260-OLA, 50-296-OLA; OPERATING LICENSE AMENDMENT; September 15, 1982; ORDER

A In view of the Appeal Board's declaration in ALAB-677, 15 NRC 1387 (1982), that its previous decision in ALAB-664 (15 NRC 1 (1982)) might have been different had it been timely presented with new information concerning licensee's application to store low-level radioactive waste at Browns Ferry, the Commission (1) dismisses its earlier grant of review of ALAB-664; (2) vacates that decision; and (3) remands the case to the Appeal Board for further proceedings.

B The Commission may dismiss its grant of review of an Appeal Board decision even though the parties have briefed the issues. See, e.g., Jones v. State Board of Education, 397 U.S. 31 (1970).

CLI-82-27 SOUTHERN CALIFORNIA EDISON COMPANY, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), Docket Nos. 50-361-OL, 50-362-OL; OPERATING LICENSE; September 24, 1982; ORDER

A The Commission directs the Appeal Board to certify to the Commission the question whether the phrase "contaminated injured individuals" as used in 10 CFR 50.47(b)(12) requires applicants for nuclear power plants to provide arrangements for medical services only for members of the public who have suffered traumatic injury and are also contaminated with radiation, and if not, to what extent that regulation requires advance and specific arrangements and commitments for medical services for the general public, as opposed to the general knowledge that facilities and resources exist and could be used on an ad hoc basis. The Commission states that it will not review the Appeal Board's decision (ALAB-680, 16 NRC 127 (1982)), denying intervenor's motion for a stay of the issuance of full-power licenses and that the license condition imposed by the Licensing Board concerning medical arrangements for the general public shall remain in effect. LBP-82-40, 15 NRC 1293 (1982); LBP-82-39, 15 NRC 1163 (1982).

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ALAB-679 NUCLEAR FUEL SERVICES, INC. and NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY (Western New York Nuclear Service Center), Docket No. 50-201-OLA; OPERATING LICENSE AMENDMENT; July 8, 1982; MEMORANDUM AND ORDER

A The Appeal Board affirms a Licensing Board order (LBP-82-36, 15 NRC 1075 (1982)) denying an intervenor's request for a hearing on an amendment to the operating license for a spent fuel reprocessing and waste disposal center in light of special statutory provisions governing administration of the center (the amendment had set conditions for the termination of the co-licensee's responsibilities).

B The Appeal Board will allow amicus participation in a hearing where the Board believes it will assist resolution of the issues and will not prejudice the rights of the parties. See, e.g., Consumers Power Company (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, n.2 (1981).

C Under the West Valley Demonstration Project Act, Pub. L. No. 96-368, 94 Stat. 1347 (1980), the Commission's review of the Department of Energy's (DOE's) demonstration waste solidification plan at West Valley is limited to informal, consultative procedures; the Commission cannot therefore explore DOE's administration of the waste solidification project in a formal evidentiary hearing.

ALAB-680 SOUTHERN CALIFORNIA EDISON COMPANY, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), Docket Nos. 50-361-OL, 50-362-OL; OPERATING LICENSE; July 16, 1982; DECISION

A The Appeal Board denies intervenors' motion for a stay pending appeal of the Licensing Board's initial decision (LBP-82-39, 15 NRC 1163 (1982)) which authorized the issuance of a full power operating license for Units 2 and 3 of this facility.

B The determination whether an application for a stay of a licensing board decision should be granted is governed by the criteria in 10 CFR 2.788(e).

C In deciding whether to allow operation of a plant during appellate review of the pertinent licensing board decision, the standard to be applied is whether operation of the plant over the additional proceedings is consistent with the requirement that there be reasonable assurance that the public health and safety not be endangered. Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 2), ALAB-486, 8 NRC 9, 46 (1978). That standard does not call upon a party to show that a serious nuclear accident is likely during the pendency of the appeal; it would be enough to show that apparent inadequacies were sufficient to raise the question whether plant operation would present an undue risk to the public in the event of a serious nuclear accident. Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 698 (1982).

D Under the Commission's emergency planning regulations, an applicant for a plant operating license has an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the emergency plans for the plant are not significant, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation. 10 CFR 50.47(c)(1).

E In reviewing a licensing board decision in the context of a motion for a stay pending its appeal, the normal deference that an appeal board owes to the trier of facts when reviewing a decision on the merits is even more compelling. See Toledo Edison Co. (Davis-Besse Nuclear Power Station, Units 1, 2 and 3), ALAB-385, 5 NRC 621, 629 (1977).

F An appeal board may disagree with a licensing board's interpretation on an issue even if no party presses an appeal on that issue. Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978).

G Where a party has not pursued a contention before the Licensing Board in the form of proposed findings of fact, the Appeal Board will not entertain it "for the first time on appeal — absent a 'serious substantive issue.'" Public Service Electric and Gas Co. (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).

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H At the operating license stage, the NRC staff generally has the final word on all safety matters not placed into controversy by the parties. South Carolina Electric and Gas Co. (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 n.31 (1981).

I An operating license may not issue unless and until the agency makes the findings specified in 10 CFR 50.57 — including the ultimate finding that such issuance "will not be inimical to . . . the health and safety of the public." As to those aspects of reactor operation not considered in an adjudicatory proceeding (if one is conducted), it is the staff's duty to insure the existence of an adequate basis for each of the requisite Section 50.57 determinations. South Carolina Electric and Gas Co. (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895-96 (1981), affirmed sub nom. Fairfield United Action v. Nuclear Regulatory Commission, No. 81-2042 (D.C. Cir., April 28, 1982).

J Before a full power operating license issues for a plant, the Commission must complete its immediate effectiveness review of the pertinent licensing board decision pursuant to 10 CFR 2.764(f)(2).

ALAB-681 PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-275-OL, 50-323-OL; OPERATING LICENSE; July 16, 1982; MEMORANDUM AND CERTIFICATION TO THE COMMISSION

A Prior to consideration of a motion by the intervenors to reopen the record in this operating license proceeding to hear assertedly new evidence regarding breakdowns on the quality assurance/quality control program for the plant, the Appeal Board seeks Commission guidance (by way of certification) on whether the Commission intended, in its November 19, 1981 order (CLI-81-30) suspending the Diablo Canyon low-power license and establishing an independent verification program, to deprive the adjudicatory boards of jurisdiction to consider quality assurance and quality control issues involving the plant.

ALAB-682 ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE (Cobalt-60 Storage Facility), Docket No. 30-6931 (Renewal of Byproduct Materials License No. 19-08330-03); BYPRODUCT MATERIALS LICENSE RENEWAL; July 16, 1982; DECISION

A The Appeal Board reverses a Licensing Board decision (LBP-82-24, 15 NRC 652 (1982)) that held petitioner did not have standing to intervene in this materials license renewal proceeding. The Appeal Board grants the request to intervene, remands the proceeding to the Licensing Board with instructions to allow the petitioner to supplement its petition in accordance with 10 CFR 2.714(b), and orders the proceeding be consolidated with another proceeding involving renewal of the operating license for a research reactor of the same licensee, housed in the same building, if petitioner can present a litigable contention with regard to the materials license. The Appeal Board discusses the statutory requirements for notice in materials licensing cases and recommends that the Commission consider the issue in a rulemaking.

B An intervention petitioner who resides near a nuclear facility need not show a causal relationship between injury to its interest and the licensing action being sought in order to establish standing. Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 57 n.5 (1979).

C In a materials license renewal proceeding under 10 CFR Part 30 — as in construction permit and operating license proceedings under 10 CFR Part 50 — proximity to a large source of radioactive material is sufficient to establish the requisite interest for standing to intervene. Whether a petitioner's stated concern is in fact justified must be left for consideration when the merits of the controversy are reached.

D Official notice of information in another proceeding is permissible where the parties to the two proceedings are identical, there was an opportunity for rebuttal, and no party is prejudiced by reliance on the information. See United States v. Pierce Auto Freight Lines, 327 U.S. 515, 527-30 (1945); 10 CFR 2.743(i).

ALAB-683 PUGET SOUND POWER AND LIGHT COMPANY, et al. (Skagit/Hanford Nuclear Power Project, Units 1 and 2), Docket Nos. 50-522, 50-523; CONSTRUCTION PERMIT; July 27, 1982; MEMORANDUM AND ORDER

A Acting under the authority of 10 CFR 2.787(b), the Appeal Panel Chairman dismisses an interlocutory appeal by intervenors of the Licensing Board's rejection of certain of their contentions.

B A person may take an interlocutory appeal from an order entered on his or her intervention petition only where the order has the effect of denying the petition in its entirety. 10 CFR 2.714a.

ALAB-684 CONSUMERS POWER COMPANY (Midland Plant, Units 1 & 2), Docket Nos. 50-329-OM&OL, 50-330-OM&OL; MODIFICATION ORDER AND OPERATING LICENSE; July 27, 1982; MEMORANDUM AND ORDER

A The Appeal Board dismisses without prejudice an intervenor's purported appeal from a Licensing Board order, LBP-82-35, 15 NRC 1060 (1982), which authorized certain interim amendments to the Midland

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construction permits pending subsequent issuance of the Board's partial initial decision. The Appeal Board construes the intervenor's filings as a complaint against staff's compliance with and implementation of the Licensing Board's order, rather than the order itself, and leaves the matter to the intervenor to present to the Licensing Board.

B Issues relating to compliance with and implementation of a Licensing Board order, rather than the order itself, should be presented to the Licensing Board in the first instance, rather than to the Appeal Board.

C Although the time limits established by the Rules of Practice with regard to appeals from Licensing Board decisions and orders are not jurisdictional, Appeal Board policy is to construe them strictly. Nuclear Engineering Co. (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-606, 12 NRC 156, 160 (1980). Hence, untimely appeals are not accepted absent a demonstration of "extraordinary and unanticipated circumstances." See 10 CFR Part 2, Appendix A, IX(d)(3).

ALAB-685 METROPOLITAN EDISON COMPANY (Three Mile Island Nuclear Station, Unit No. 1), Docket No. 50-289-SP; RESTART; August 2, 1982; MEMORANDUM AND ORDER

A The Appeal Board suspends until further notice licensee's obligation to submit certain information requested as part of the Board's sua sponte review, and clarifies the scope of its appellate jurisdiction in thisspecial proceeding.

B The fact that the Three Mile Island restart proceeding is a special proceeding not specifically addressed by Commission regulations does not deprive the Appeal Board of its well-established right to review sua sponte an issue that was contested before the Licensing Board but not raised on appeal. See generally Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978); Public Service Electric and Gas Co. (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 n.6 (1981).

C Authority to review the entire record of a proceeding independently of the parties' position is different from (1) the power in operating license application proceedings to consider serious safety, environmental, and common defense and security matters not otherwise placed in issue by the parties, and (2) seeking Commission approval in cases not involving operating license applications before pursuing new safety questions not previously put in controversy or otherwise raised by the parties.

ALAB-686 OFFSHORE POWER SYSTEMS (Manufacturing License for Floating Nuclear Power Plants), Docket No. STN 50-437-ML; MANUFACTURING LICENSE; August 11, 1982; MEMORANDUM AND ORDER

A The Appeal Board (1) considers the applicability of the "immediate effectiveness" regulation (10 CFR 2.764) to the Licensing Board's June 30, 1982 initial decision (LBP-82-49, 15 NRC 1658 (1982)) in this manufacturing license proceeding and concludes that it is not obliged by the regulation to conduct such a review in manufacturing license proceedings; (2) announces that in the absence of exceptions to the initial decision, it has undertaken sua sponte review of it; and (3) reminds the parties that the initial decision shall not constitute final agency action until completion of that review by the Appeal Board and its further order.

B The Commission's "immediate effectiveness" regulation, 10 CFR 2.764 (1982), as amended, 47 Fed. Reg. 2286 (January 15, 1982), requires in the case of construction permits, certain limited and immediate appeal board and Commission review — and, in the case of operating licenses, Commission review only — of an initial decision before it can become effective.

C Under the Commission's "immediate effectiveness" regulation, an appeal board is not obliged to conduct an immediate effectiveness review in manufacturing license proceedings.

D The only time an appeal board — as opposed to the Commission itself — is required to conduct an immediate effectiveness review is within 60 days of an initial decision authorizing the issuance of a reactor construction permit. 10 CFR 2.764(e)(2).

E The starting point in interpreting a regulation is the language of the regulation itself. Cf. Lewis v. United States, 445 U.S. 55, 60 (1980). Depending on the circumstances, it may be appropriate to consider the underlying history of the regulation as well. Cf. Tennessee Valley Authority v. Hill, 437 U.S. 153, 184-85 (1978).

ALAB-687 DUKE POWER COMPANY, et al. (Catawba Nuclear Station, Units 1 and 2), Docket Nos. 50-413, 50-414; LIMITED WORK AUTHORIZATION; August 19, 1982; MEMORANDUM AND ORDER

A The Appeal Board accepts a Licensing Board referral, pursuant to 10 CFR 2.730(f), of a number of interlocutory Licensing Board rulings conditionally admitting certain contentions in this operating license proceeding. The Appeal Board concludes that a licensing board has no authority to admit conditionally, for any reason, a contention that falls short of meeting the specificity requirements of 10 CFR 2.714(a). The Appeal Board provides further interpretation of the governing Rules of Practice relating to contentions and leaves to the Licensing Board the application of that interpretation to the contentions.

B Appeal boards are empowered to decline the acceptance of licensing board referrals.

C Regardless of whether presented on "certification" pursuant to 10 CFR 2.718(i) or by referral pursuant to 10 CFR 2.730(f), the question of whether interlocutory appellate review of an issue should be undertaken turns on whether a failure to address that issue would seriously harm the public interest, result in unusual delay or expense, or affect the basic structure of the proceeding in some pervasive or unusual manner. Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-634, 13 NRC 96, 99 (1981).

D Under 10 CFR 2.714, a licensing board is not authorized to admit conditionally, for any reason, a contention that falls short of meeting the specificity requirements of the Section.

E Neither Section 189a. of the Atomic Energy Act nor Section 2.714 of the Commission's Rules of Practice permits an intervention petitioner to file a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or the NRC staff. Rather, an intervention petitioner has an ironclad obligation to examine the publicly available documentary material pertaining to the facility in question with sufficient care to enable it to uncover any information that could serve as a foundation for a specific contention. Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 192 (1973), affirmed CLI-73-12, 6 AEC 241 (1973), affirmed sub nom. BPI v. AEC, 502 F.2d 424 (D.C. Cir. 1974).

F The wording of a regulation generally takes precedence over any contradictory suggestion in its administrative history.

G The hearing mandate of Section 189a. of the Atomic Energy Act does not confer the automatic right of intervention upon anyone; rather, the Commission may condition the exercise of that right upon the meeting of reasonable procedural requirements. BPI v. AEC, 502 F.2d 424, 428 (1974).

H No procedural requirement can lawfully operate to preclude from the very outset a hearing under Section 189a. of the Atomic Energy Act on an issue both within the scope of the petitioner's interest and germane to the outcome of the proceeding.

I The determination whether to accept an untimely contention which was susceptible of filing within the period prescribed by the Rules of Practice involves a consideration of all five 10 CFR 2.714(a) factors — and not just the reason (substantial or not as the case may be) why a petitioner did not meet the deadline.

J In determining whether to accept an untimely contention under 10 CFR 2.714(a), if the contention could not have been asserted with sufficient specificity during the period prescribed by the Rules of Practice due to the non-existence or public unavailability of relevant documents, that factor must be deemed controlling; it is not amenable to being overridden by the other 2.714(a) factors such as that relating to the broadening of the issues.

ALAB-688 UNITED STATES DEPARTMENT OF ENERGY, PROJECT MANAGEMENT CORPORATION, TENNESSEE VALLEY AUTHORITY (Clinch River Breeder Reactor Plant), Docket No. 50-537; LIMITED WORK AUTHORIZATION; August 25, 1982; MEMORANDUM AND ORDER

A The Appeal Board denies a petition for directed certification of an unpublished Licensing Board order (August 5, 1982) which sets forth the scope of and schedule for evidentiary hearings in the limited work authorization proceeding for this facility.

B A limited work authorization (LWA-1) allows preliminary construction work to be undertaken at the applicant's risk, pending completion of later hearings covering radiological health and safety issues. See 10 CFR 50.10(e)(1); Public Service Co. of Oklahoma, et al. (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 778 (1979). Before an LWA-1 can be granted, the staff must have issued the final environmental impact statement relating to the construction of the facility. Moreover, the Licensing Board must have made all the environmental findings required for issuance of a construction permit and "determined that . . . there is reasonable assurance that the proposed site is a suitable location for a reactor of the general size and type proposed from the standpoint of radiological health and safety considerations." 10 CFR 50.10(e)(2).

C Discretionary interlocutory review will be granted only sparingly, and then only when a licensing board's action either (a) threatens the party adversely affected with immediate and serious irreparable harm which could not be remedied by a later appeal, or (b) affects the basic structure of the proceeding in a pervasive or unusual manner. Public Service Electric and Gas Co. (Salem Nuclear Generating Station, Unit 1), ALAB-588, 11 NRC 533, 536 (1980). Especially in light of the paucity of construction permit applications, legal issues involving the timing of the admission of evidence at LWA hearings cannot be considered recurring issues of great importance to the proper functioning of the licensing process.

D An appeal board will be particularly reluctant to grant a request for directed certification where the question for which certification has been sought involves the scheduling of hearings or the timing and admissibility of evidence, see Toledo Edison Co. and Cleveland Electric Illuminating Co. (Davis-Besse Nuclear Power Station, Unit 1), ALAB-314, 3 NRC 98, 99-100 (1976), and will be inclined to do so only to entertain a claim that a board abused its discretion by setting a hearing schedule that deprives a party of its right to procedural due process. Public Service Co. of Indiana, Inc. (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978). See generally Houston Lighting & Power Co., et al. (South Texas Project, Units 1 and 2), ALAB-637, 13 NRC 367, 370-71 (1981)

ALAB-689 OFFSHORE POWER SYSTEMS (Manufacturing License for Floating Nuclear Power Plants), Docket No. STN 50-437-ML; MANUFACTURING LICENSE; September 1, 1982; MEMORANDUM AND ORDER

A The Appeal Board grants applicant's motion for clarification of its previous memorandum and order (ALAB-686, 16 NRC 454 (1982)) in which the Appeal Board (1) concluded that it is not obliged by the "immediate effectiveness" regulation (10 CFR 2.764) to conduct such a review in manufacturing license proceedings, and (2) announced that, in the absence of exceptions to the Licensing Board's initial decision (LBP-82-49, 15 NRC 1658 (1982)), it would undertake sua sponte review of it. In granting the motion for clarification, the Appeal Board explains, inter alia, the nature of its sua sponte review authority and its relationship to the effectiveness of licensing board initial decisions.

B An immediate effectiveness review of a licensing board decision is not a substitute for an appeal board's usual sua sponte review of the decision and its underlying record before the decision is accorded finality.

C Sua sponte review by an appeal board is a long-standing Commission-approved practice which is undertaken in all cases, regardless of their nature or whether exceptions have been filed. See 10 CFR 2.760(a), 2.785(a). This type of review extends to " 'any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues.' " Sacramento Municipal Utility District (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981), quoting Washington Public Power Supply System (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979). See also Northern States Power Company (Monticello Nuclear Generating Plant, Unit 1), ALAB-611, 12 NRC 301, 304 (1980), and cases cited.

D Only the administrative finality of a licensing board's decision is deferred pending sua sponte review by an appeal board; the effectiveness of the decision is not stayed.

E If sua sponte review uncovers problems in a licensing board's decision or the record that may require corrective action adverse to a party's interest, the appeal board's consistent practice is to give the party ample opportunity to address the matter, as appropriate. See, e.g., Rancho Seco, supra, 14 NRC at 803-04, 817; Monticello, supra, 12 NRC at 309-13; Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-529, 9 NRC 153 (1979); Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 249-50 (1978).

ALAB-690 LOUISIANA POWER AND LIGHT COMPANY (Waterford Steam Electric Station, Unit 3), Docket No. 50-382-OL; REMAND; September 7, 1982; MEMORANDUM AND ORDER

A The Appeal Board dismisses without prejudice a petitioner's appeal from a non-final order of the Licensing Board.

B The test of "finality" for appeal purposes before the Nuclear Regulatory Commission (as in the courts) is essentially a practical one. As a general matter, a licensing board's action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party's right to participate; rulings which do neither are interlocutory. Toledo Edison Co., et al. (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 758 (1975). Where a party has been given an opportunity to file a new petition for leave to intervene, the Licensing Board order that denied the prior petition is non-final and not immediately appealable.

ALAB-691 CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2), Docket Nos. 50-329-CP, 50-330-CP; REMAND; September 9, 1982; DECISION

A The Appeal Board dismisses an intervenor's appeal of the Licensing Board's decision in LBP-81-63, 14 NRC 1768 (1981), not to impose sanctions against the licensee for failure to disclose assertedly significant information in an earlier phase of this construction permit proceeding. The Appeal Board, however, pursuant to sua sponte review of the record affirms the Licensing Board's decision not to impose sanctions, but corrects certain of the Board's underlying legal conclusions.

B Requiring the submission to a licensing board of proposed findings of fact or a comparable document is not a mere formality: it gives that board the benefit of a party's arguments and permits it to resolve them in the first instance — possibly in the party's favor, obviating later appeal.

C Unless there is a serious substantive issue as to which a genuine problem has been demonstrated, an appeal board ordinarily will not entertain an issue raised for the first time on appeal. Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978). See also Public Service Electric and Gas Co., et al. (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).

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D A party that fails to submit proposed findings as requested by a licensing board, relying instead on the submissions of others, assumes the risk that such reliance might be misplaced, it must be prepared to live with the consequence that its further appeal rights will be waived. Cf. Duke Power Co. (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-440, 6 NRC 642, 644-45 (1977).

E Although parties not adversely affected by the ultimate outcome of a licensing board decision may not appeal that decision, they may defend a result in their favor on any ground presented in the record, including one rejected below. Public Service Co. of Oklahoma, et al. (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 789 (1979).

F Regardless of whether there is an appeal, it is appeal board practice to review sua sponte any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues. Sacramento Municipal Utility District (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981); Washington Public Power Supply System (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979).

G Appeal boards do not ordinarily scrutinize licensing board rulings on economic issues, intervention requests, or procedural matters in the absence of a properly perfected appeal. Louisiana Power and Light Co. (Waterford Steam Generating Station, Unit No. 3), ALAB-258, 1 NRC 45, 48 n.6 (1975); Washington Public Power Supply System (Nuclear Projects No. 1 and No. 4), ALAB-265, 1 NRC 374, 375 n.1 (1975); Boston Edison Co. (Pilgrim Nuclear Power Station, Unit 1), ALAB-231, 8 AEC 633-634 (1974).

H An appeal board may undertake sua sponte review of a licensing board decision concerned with the integrity of the hearing process.

I It is not the appeal board's function in a sua sponte review of a licensing board decision to undertake a detailed scrutiny of the entire record. Rather the appeal board usually addresses only those portions of the licensing board's opinion that it believes deserve clarification or correction. Further, absence of appeal board comment on a particular licensing board statement should not be construed as either agreement or disagreement with it.

J An applicant or a licensee has an obligation in NRC proceedings to provide accurate and timely information. Petition for Emergency and Remedial Action, CLI-78-6, 7 NRC 400, 418 (1978). See also Tennessee Valley Authority (Browns Ferry Nuclear Plant, Units 1, 2 and 3), ALAB-677, 15 NRC 1387 (1982). The source of this obligation is the Atomic Energy Act itself. See Section 186a, 42 U.S.C. 2236a.

K Liability of an applicant or licensee for a material false statement in violation of Section 186a of the Atomic Energy Act does not depend on whether the applicant or licensee knew of the falsity. Virginia Electric and Power Co. (North Anna Power Station, Units 1 and 2), CLI-76-22, 4 NRC 480 (1976), aff'd sub nom. Virginia Electric and Power Co. v. Nuclear Regulatory Commission, 571 F.2d 1289 (4th Cir. 1978).

L Under Section 186a of the Atomic Energy Act, the test for materiality is whether the information is capable of influencing the decisionmaker — not whether the decisionmaker would, in fact, have relied on it. Determinations of materiality require careful, common-sense judgments of the context in which information appears and the stage of the licensing process involved. North Anna, supra, 4 NRC at 487, 491.

M A "material false statement" under Section 186a of the Atomic Energy Act encompasses omissions as well as affirmative statements. North Anna, supra, 4 NRC at 489.

N In general, if a party has doubts about whether to disclose information, it should do so, as the ultimate decision with regard to materiality is for the decisionmaker, not the parties.

O The mere existence of a question or discussion about the possible materiality of information does not necessarily make the information material.

P Intent to deceive is irrelevant in determining whether there has been a material false statement under Section 186a of the Atomic Energy Act; a deliberate effort to mislead the NRC, however, is relevant to the matter of sanctions, once a material false statement has been found.

Q Information concerning a licensee's or an applicant's intent to deceive may call into question its "character" — a matter the Commission is authorized to consider under Section 182 of the Atomic Energy Act, 42 U.S.C. 2232a — or its ability and willingness to comply with agency regulations, as Section 103b, 42 U.S.C. 2133b, requires.

R The Commission's Rules of Practice require parties and their representatives to conduct themselves with honor, dignity, and decorum as they should before a court of law. 10 CFR 2.713(a).

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S The Commission generally follows the American Bar Association's Code of Professional Responsibility in judging lawyer conduct in NRC proceedings. See, e.g., Northern Indiana Public Service Co. (Bailly Generating Station, Nuclear-1), ALAB-204, 7 AEC 835, 838 (1974).

T Canon 7 of the ABA Code of Professional Responsibility — which exhorts lawyers to represent their clients "zealously within the bounds of the law" — and its associated Ethical Considerations and Disciplinary Rules provide the standards by which attorneys should abide in the preparation of testimony for NRC proceedings.

U In judging the propriety of a lawyer's participation in the preparation of testimony of a witness, the key factor is not who originated the words that comprise the testimony, but whether the witness can truthfully attest that the statement is complete and accurate to the best of his or her knowledge.

V Gamesmanship and sporting conduct between or among lawyers and parties is not condoned in Nuclear Regulatory Commission proceedings.

ALAB-692 METROPOLITAN EDISON COMPANY, et al. (Three Mile Island Nuclear Station, Unit No. 2), Docket No. 50-320-OLA; OPERATING LICENSE AMENDMENT; September 14, 1982; DECISION

A Following the conduct of additional evidentiary hearings by the Appeal Board on the probability of a heavy aircraft (one weighing more than 200,000 pounds) crashing into the TMI-2 plant, the Board finds the analyses performed by the NRC Staff and the applicants produced acceptable results based upon data then at hand (pre 1978 data). As to any future return of the plant to service, the Appeal Board requires an updated analysis of the crash probability prior to its operation (and at least once every three years thereafter), and such protective action as the analysis might indicate.

B The following technical issues are discussed: Aircraft crash probability; Bayesian Theory; Confidence limits (precision, uncertainty).

ALAB-693 PENNSYLVANIA POWER AND LIGHT COMPANY and ALLEGHENY ELECTRIC COOPERATIVE, INC. (Susquehanna Steam Electric Station, Units 1 and 2), Docket Nos. 50-387-OL, 50-388-OL; OPERATING LICENSE; September 28, 1982; MEMORANDUM AND ORDER

A The Appeal Board dismisses an intervenor's appeal from the Licensing Board's initial decision (LBP-82-30, 15 NRC 771 (1982)) authorizing the issuance of full-power operating licenses for Units 1 and 2 of this facility. The Appeal Board notes that the initial decision does not constitute final agency action until it completes sua sponte review of it.

B A party's brief must (1) specify the precise portion of the record relied upon in support of the assertion of error, 10 CFR 2.762(a), and (2) relate to matters raised in the party's proposed findings of fact and conclusions of law. An appeal board will not ordinarily entertain arguments raised for the first time on appeal, absent a serious substantive issue. Public Service Electric and Gas Co., et al. (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981); Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978). See also Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 906-07 (1982).

C An appeal may be dismissed when a party's brief contains only conclusory assertions without sufficient information to dispose of its arguments intelligently. Public Service Co. of Oklahoma, et al. (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 786-87 (1979). See also Duke Power Co. (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 413 (1976).

D Prior to issuing an operating license, the Director of Nuclear Reactor Regulation must find that Commission regulations (including those implementing NEPA) have been satisfied and that the activities authorized by the license can be conducted without endangering the health and safety of the public. See 10 CFR 50.4(d), 50.57; Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 44 (1978), remanded on other grounds sub nom. Minnesota v. Nuclear Regulatory Commission, 602 F.2d 412 (D.C. Cir. 1979).

E Lay representatives generally are not held to the same standard for appellate briefs that is expected of lawyers. Salem, supra, 14 NRC at 50 n.7. Nonetheless, NRC litigants appearing pro se or through lay representatives are in no way relieved by that status of any obligation to familiarize themselves with the Commission's rules. To the contrary, all individuals and organizations electing to become parties to NRC licensing proceedings can fairly be expected both to obtain access to a copy of the rules and refer to it as the occasion arises. Pennsylvania Power and Light Co. and Allegheny Electric Cooperative, Inc. (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-563, 10 NRC 449, 450 n.1 (1979).

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F An intervenor in NRC licensing proceedings has a basic obligation to "structure [its] participation so that it is meaningful, so that it alerts the agency to [its] position and contentions." Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519, 553 (1978).

ALAB-694 SOUTH CAROLINA ELECTRIC & GAS COMPANY, et al. (Virgil C. Summer Nuclear Station, Unit 1), Docket No. 50-395-OL; OPERATING LICENSE; September 28, 1982; MEMORANDUM AND ORDER

A The Appeal Board dismisses exceptions filed by the applicants to the Licensing Board's partial initial decision in this operating license proceeding (LBP-82-55, 16 NRC 225 (1982)). The Appeal Board announces it will undertake sua sponte review of that decision and a later Licensing Board partial initial decision (LBP-82-57, 16 NRC 447 (1982)), authorizing the issuance of an operating license for the plant, and reminds the parties that neither initial decision shall be deemed to have achieved administrative finality pending the completion of that review and further order.

B Exceptions are not necessary to defend a decision in one's favor. Only where a party is aggrieved by or dissatisfied with the action taken below and invokes the Appeal Board's jurisdiction to change the result need exceptions be filed — or are they permitted. Public Service Co. of Indiana, Inc. (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 202 (1978). See also Duke Power Co. (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-478, 7 NRC 772, 773 (1978); Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-282, 2 NRC 9, 10 n.1 (1975); Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-252, 8 AEC 1175, 1177, affirmed, CLI-75-1, 1 NRC 1 (1975); Toledo Edison Co. (Davis-Besse Nuclear Power Station), ALAB-157, 6 AEC 858, 859 (1973).

ALAB-695 COMMONWEALTH EDISON COMPANY (Dresden Station, Units 2 and 3), Docket Nos. 50-237, 50-249; SPENT FUEL POOL MODIFICATION; September 29, 1982; DECISION

A On completion of its sua sponte review of the Licensing Board's two initial decisions in this spent fuel pool modification proceeding (LBP-81-37, 14 NRC 708 (1981); LBP-82-65, 16 NRC 714 (1982)) (undertaken in the absence of any exceptions to either decision), the Appeal Board affirms the Licensing Board's decisions permitting (1) the modification of Unit 3's spent fuel pool; and (2) allowing the sought increase in spent fuel pool storage capacity for Units 2 and 3.

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LBP-82-51 DUKE POWER COMPANY, et al. (Catawba Nuclear Station, Units 1 and 2), Docket Nos. 50-413, 50-414; SPECIAL PROCEEDING; July 8, 1982; MEMORANDUM AND ORDER

A The Licensing Board overrules various objections to its Order issued following a prehearing conference pursuant to §10 CFR 2.751a. The Board also denies requests for referral of certain issues to the Appeal Board.

B Where an Intervenor seeking to challenge an Applicant's security plan does not produce a qualified expert to review the plan and declines to submit to a protective order, its vague contentions must be dismissed for failure to meet conditions that could produce an acceptably specific contention.

LBP-82-51A CONSUMERS POWER COMPANY (Big Rock Point Plant), Docket No. 50-155-OLA; SPENT FUEL POOL AMENDMENT; July 8, 1982; MEMORANDUM AND ORDER

A The Licensing Board affirms, over objections of the NRC Staff, a phased schedule for the filing of findings of fact and conclusions of law subsequent to an evidentiary hearing. Under the schedule, all parties are required to make simultaneous filings of findings of fact and conclusions of law on each of the contentions and all parties have simultaneous rights of reply.

B A Board may require phased findings of fact and conclusions of law subsequent to an evidentiary hearing in order to expedite the decision process by permitting the Board to begin analyzing the record efficiently. Under a phased schedule, early findings may be required prior to the 30 days allowed for applicants under the procedural regulations. The Board may also require simultaneous filing of these phased findings, in order to expedite the proceeding and to encourage staff to develop an independent position.

LBP-82-52 COMMONWEALTH EDISON COMPANY (Dresden Nuclear Power Station, Unit No. 1), Docket No. 50-10-OLA; OPERATING LICENSE AMENDMENT; July 12, 1982; MEMORANDUM AND ORDER

A Pursuant to a Memorandum and Order of the Commission directing its establishment (CLI-81-25, 14 NRC 616 (1981)), the Licensing Board rules that one individual and two organizations have standing to intervene in this proceeding concerned with chemical decontamination of Dresden Unit 1 but, because it finds that none of the contentions advanced by Petitioners are acceptable under 10 CFR §2.714 and CLI-81-25, the Board denies the petitions.

B An organization petitioning to intervene as a representative of its members must demonstrate that it has at least one member with personal standing who has authorized the organization to represent his or her interest.

C Purely academic interest in a problem is not an interest encompassed by 10 CFR §2.714. In order to satisfy 10 CFR §2.714, an injury in fact must be alleged.

D In order to be admitted for litigation, a contention must inform the Board and the parties of the matters sought to be litigated. Particularly where substantial technical information is available indicating the bases for the applicant's proposal and the Staff's position, Petitioners' contentions must indicate the specific respects in which they quarrel with that information.

LBP-82-53 CLEVELAND ELECTRIC ILLUMINATING COMPANY, et al. (Perry Nuclear Power Plant, Units 1 & 2), Docket Nos. 50-440-OL, 50-441-OL; OPERATING LICENSE; July 12, 1982; MEMORANDUM AND ORDER

A The Board admits late-filed contentions on psychological stress, the degradation of electrical wiring from radiation-induced embrittlement of electrical insulation, and the impropriety of considering local economic effects as benefits for purposes of the Draft Environmental Statement, but requires intervenors to further particularize two of the contentions prior to hearing.

B The Board refuses to admit a late-filed contention that the plant's closed-cycle cooling system should be replaced by a radial well system, such as has been employed at Grand Gulf Nuclear Station, in order to reduce the number of fish, fish eggs and larvae destroyed through impingement and entrainment. The Board also refuses to admit a contention that the environmental analysis must consider the possible use of nuclear fuel for nuclear weapons, should the government subsequently decide to permit the use of laser isotope separation techniques to accomplish this purpose.

C In addition, the Board rules that the decision in Natural Resources Defense Council v. NRC, Civil Action No. 74-1586 (April 27, 1982), which has not been accompanied by a mandate, does not provide grounds for reconsidering an earlier ruling excluding a contention on the safe disposal and storage of radioactive materials.

D Intervenors may be excused for lateness in filing if they keep current with reputable sources of information such as Science, Science News, and the Bulletin of the Atomic Scientist. They need not keep up with all NRC literature and all technical literature concerning nuclear reactors.

E The Commission is required to consider psychological stress in its environmental analysis providing that there is proof that a nuclear plant will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

F A court decision purporting to strike down a portion of the Commission's rules on the consideration of waste disposal issues in NEPA analyses does not invalidate those rules until the court issues its mandate. Prior to the issuance of a mandate, the rule is valid and a contention contradicting the rule cannot be admitted.

G A contention that fuel stored in a spent fuel pool might subsequently be used to manufacture nuclear weapons is not cognizable under NEPA because weapons manufacture is not part of the proposed action and would require either federal legislation or further federal administrative action.

H When the Commission has decided to implement a rule on the environmental qualification of electrical equipment but has not yet decided when to make the rule effective, it is appropriate to admit a contention on the subject. Provision may be made for applicant or staff to stay discovery on the contention if they wish.

I The following technical issues are discussed: Embrittlement of electrical insulation; environmental qualification of electric wiring; radiation, effects on polymers; polymer degradation due to radiation; psychological stress, legal standard for NEPA consideration; impingement of fish, minimum standard for NEPA consideration; entrainment of fish, minimum standard for NEPA consideration.

LBP-82-53A CLEVELAND ELECTRIC ILLUMINATING COMPANY, et al. (Perry Nuclear Power Plant, Units 1 & 2), Docket Nos. 50-440-OL, 50-441-OL; OPERATING LICENSE; July 19, 1982; MEMORANDUM AND ORDER

A The Licensing Board revises its earlier decision (LBP-82-53) and dismisses a psychological stress contention based on a statement of policy issued by the Commission.

LBP-82-54 CINCINNATI GAS & ELECTRIC COMPANY, et al. (Zimmer Nuclear Power Station, Unit 1), Docket No. 50-358-OL; OPERATING LICENSE; July 15, 1982; MEMORANDUM AND ORDER

A Licensing Board rules that an intervenor proposing eight untimely contentions challenging applicants' quality assurance procedures and character and competence to operate a nuclear facility failed to meet the standards of 10 CFR 2.714. In light of the seriousness of the issues, the Board adopts them sua sponte.

B When untimely contentions are advanced on the eve of an initial decision which ordinarily would conclude Licensing Board consideration of an application, the proponent must furnish substantial justification for the delay.

C When untimely proposed contentions raise issues so serious that a decision adverse to the applicant might require denial of an operating license, the Licensing Board may exercise its authority under 10 CFR §2.718(j) and 2.760a to reopen the record and admit the contentions as Board-raised issues.

D It is a clear requirement for representational standing that an organization seeking to represent the interests of its members submit evidence of authorization to do so from at least one member with standing to participate in the proceeding.

LBP-82-55 SOUTH CAROLINA ELECTRIC AND GAS COMPANY, et al. (Virgil C. Summer Nuclear Station, Unit 1), Docket No. 50-395-OL; OPERATING LICENSE; July 20, 1982; PARTIAL INITIAL DECISION

A In this Partial Initial Decision the Licensing Board resolves the seismic issues in controversy in favor of plant safety concluding that the seismic safety of the Summer Nuclear Plant will be assured if the operating license is made subject to two conditions: (1) that seismic monitoring be continued at least until December 31, 1983, and that the NRC Staff reevaluate at that time the need for further monitoring; and (2) that Applicants successfully complete within the first year of operation a confirmatory program to demonstrate to the NRC Staff's satisfaction that explicit safety margins exist for each component necessary for shutdown and continued heat removal in the event of the maximum potential shallow earthquake.

B The following technical issues are discussed: Reservoir-induced seismicity — occurrence after impoundment, shallow earthquakes and near-source earthquakes; Ground motion — peak accelerations,

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amplification from bedrock (soil, topographical, soil-pad interaction), response spectra, theoretical models and empirical data; Magnitude potential — deep vs. shallow earthquakes, source dimension, deviatoric stress; Seismic structural capacity — engineered structures, equipment and components, natural frequencies and reduction of motion (imbedment of foundation).

LBP-82-56 METROPOLITAN EDISON COMPANY (Three Mile Island Nuclear Station, Unit 1), Docket No. 50-289; RESTART; July 27, 1982; PARTIAL INITIAL DECISION

A The Licensing Board issues its third and concluding partial initial decision which resolves the special restart proceeding in favor of restarting TMI Unit 1 subject to certain recommendations, conditions and a monetary penalty.

B Technical issues discussed: utility's responsibility to train and examine candidates for NRC operator licenses; utility's responsibility to certify only competent candidates for NRC operator licenses; standards for maintaining and renewing operator licenses; the NRC operator licensing responsibilities; auditing of utility's operator training and examination program; the method of validating NRC operator license examination for specific plants; proctoring and grading NRC operator licensing examinations; quality assurance applied to training and testing operators; redundant assurance of reactor operator competence; reactor coolant chemistry; reactor coolant pump bearing and seals.

C Licensing Board appointed Special Master pursuant to 10 CFR 2.722(a)(2) and specified issues to be heard by Special Master

D Licensing Board adopts as its own the evidentiary record made before Special Master.

E The Board, not the Special Master, is authorized by Notice of Hearing, regulations and statute to render Administrative Procedure Act initial decision. Special Master's report is advisory only. Board must render decision based on its own understanding of the reliable, probative and substantial evidence.

F Licensing Board affords weight to Special Master's reported direct observations of witness demeanor, but where Special Master's conclusions are materially affected by witness demeanor, Licensing Board must give especially careful consideration to whether or not other more objective witness credibility standards are consistent with Special Master's conclusions.

G Where inferences and factual conclusions depend upon the ethical orientation and expectations of the fact-finder, Licensing Board relies upon its collegial judgment but accepts Special Master's conclusions as informed advice.

H Results of hearing before Special Master and its effect upon the entire proceeding before the Board are exclusively within the jurisdiction of the Board vis-a-vis the jurisdiction delegated to the Special Master.

I Licensing Board does not endorse Special Master's recommendation that NRC examination cheaters be referred for criminal prosecution, because criminal prosecution has not been shown to relate to jurisdiction granted by Notice of Hearing.

J Licensing Board has no jurisdiction and authority to direct the NRC Staff to conduct future investigation into alleged false material statement under ruling of Carolina Power and Light Company (Shearon Harris, Units 1-4), CLI-80-12, 11 NRC 514 (1980).

K Although not presiding over a proceeding noticed as a civil penalty case, Licensing Board nevertheless imposes a monetary penalty on licensed utility of $100,000 for negligent failure to safeguard the integrity of the utility's operator examination process, failure to instill an attitude of respect for the utility- and NRC-administered examinations, failure to assure the quality of operator training instruction and negligence in the certification of candidates for NRC operator licensing. Board's jurisdiction to impose monetary penalty flows from authority set out in Notice of Hearing to require long-term measures necessary to provide reasonable assurance that Three Mile Island Unit 1 can be operated without endangering the public health and safety.

L Upon issuing a partial initial decision, Licensing Board retained jurisdiction over a portion of the subject matter of that decision because of new information on cheating on the NRC operator licensing examination.

M NRC investigator's testimony that operator licensing examination candidate told him that another operator licensing examination candidate attempted to cheat, particularly in light of uncertain memories of investigator and the informing candidate, is unreliable hearsay.

N Rumors that an employee of Licensee cheated are the worst kind of hearsay (United States v. Mandel, 591 F.2d 1347 (4th Cir. 1979); cert. denied, 100 S. Ct. 1647; 445 U.S. 961; 64 L. Ed. 236 (1980)) and not worthy of evidentiary weight as to the truth of the rumors. Rumors may be considered, however, in assessing thoroughness of investigation and may be pursued in the interest of a complete evidentiary record.

O The Board finds that it is fair to draw an inference unfavorable to a suspected cheater where, as a voluntary witness, suspected cheater alone has solution to mystery surrounding his activities and fails to explain his activities despite opportunity to do so.

P Certification to the NRC's Operator Licensing Branch that licensed operator has requalified based upon the known improper assistance of another operator is a false material statement under the Atomic Energy Act.

Q Licensing Board finds that two licensed operators cheated on company-administered license qualification examination but, because operators have not had notice of charges against them or opportunity to confront evidence because of sequestration, no action may be taken against their personal operator licenses without further proceeding. However, findings that the operators cheated are findings against the licensed utility.

LBP-82-57 SOUTH CAROLINA ELECTRIC AND GAS COMPANY, et al. (Virgil C. Summer Nuclear Station, Unit 1), Docket No. 50-395-OL; OPERATING LICENSE; August 4, 1982; SUPPLEMENTAL PARTIAL INITIAL DECISION

A In this Supplemental Partial Initial Decision the Licensing Board authorizes the issuance of a full-term operating license subject to certain conditions relating to seismic safety, emergency preparedness and steam generator tube problems. The Board considered issues involving anticipated transients without scram (ATWS), emergency preparedness, quality assurance/quality control, and health effects from the operation of the facility and from the uranium fuel cycle.

B The following technical issues are discussed: Health effects — risk estimators, linear model, and super linear model.

LBP-82-58 DAIRYLAND POWER COOPERATIVE (La Crosse Boiling Water Reactor), Docket Nos. 50-409-FTOL, 50-409-SC; OPERATING LICENSE; August 2, 1982; MEMORANDUM AND ORDER

A The Licensing Board grants the motions of the NRC Staff and Applicant for summary disposition of all environmental contentions and concludes its consideration of other environmental questions which had arisen during the course of this full-term operating license proceeding.

B The Commission and Appeal Board have encouraged the use of summary disposition to resolve contentions where an intervenor has failed to establish that a genuine issue exists.

C The Commission's summary disposition procedures have been analogized to Rule 56 of the Federal Rules of Civil Procedure. Decisions arising under the Federal Rules thus may serve as guidelines to licensing boards in applying the Commission's summary disposition procedures.

D The burden of proof lies upon the movant for summary disposition, who must demonstrate the absence of any issue of material fact. If a movant fails to make the requisite showing, its motion may be denied even in the absence of any response by the proponent of a contention.

E Where a movant for summary disposition fails to include the requisite "separate, short and concise statement of the material facts as to which the moving party contends that there is no genuine issue to be heard," or where the statement is inadequate, a Board may dismiss the motion for summary disposition as procedurally defective or, alternatively, can decline to give the statement the effect it would otherwise be accorded.

F Compliance with the design objectives set forth in 10 CFR Part 50, Appendix I, establishes that the doses to offsite individuals are as low as reasonably achievable.

G To warrant consideration of alleged environmental effects of plant operation at an evidentiary hearing, more must be shown than that those effects are theoretically possible.

H Unless a nuclear plant has environmental disadvantages in comparison to reasonable alternatives, differences in financial costs do not enter into the NEPA process and, hence, into NRC's cost-benefit balance. Only after an environmentally superior alternative has been identified do economic considerations become relevant.

I Issues concerning alternative energy sources in general may no longer be considered in operating license proceedings.

J Issues raising need for power in general may no longer be considered in operating license proceedings. Lack of a previous NEPA review would not be the type of "special circumstance" needed to justify such consideration.

K In proceedings instituted prior to June, 1980, serious (Class 9) accidents may be considered only upon a showing of "special circumstances."

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LBP-82-59 TEXAS UTILITIES GENERATING COMPANY, et al. (Comanche Peak Steam Electric Station, Units 1 and 2), Docket Nos. 50-445, 50-446; SHOW CAUSE; August 4, 1982; ORDER TO SHOW CAUSE

A The Licensing Board orders the NRC Staff to show cause why sanctions should not be imposed for the Staff's refusal to obey a Board order to identify by name individuals interviewed in connection with an investigation and to provide unexpurgated copies of signed statements taken from them. The investigation concerned allegations by a former quality control inspector that he had been wrongfully discharged for reporting defects in construction which he had identified in the performance of his job and the investigation report had been introduced as an exhibit by the Staff.

B A qualified informer's privilege exists in NRC practice only for informers who have been given promises and pledges of anonymity.

C Informer's privilege must yield when, in the context of an ongoing hearing on safety issues, a Board needs the protected information to determine the credibility of witnesses on contested matters.

LBP-82-60 CONSUMERS POWER COMPANY (Big Rock Point Plant), Docket No. 50-155-OLA; SPENT FUEL POOL AMENDMENT; August 6, 1982; INITIAL DECISION

A This is the first of a series of initial decisions concerning an amendment to permit 441 fuel assemblies to be stored in the spent fuel pool at Big Rock Point, compared to a current authorization for only 193 assemblies. This decision directs that certain changes be made in the emergency planning pamphlet that is distributed within the Emergency Planning Zone for the purpose of informing people about procedures to follow in case of an emergency at the nuclear plant. The decision also finds that there is as yet no adequate plan to distribute the pamphlet in public places or to inform transients, including large numbers of skiers and summer tourists, of appropriate steps to take in an emergency.

B Applicant must demonstrate that a satisfactory prompt notification system is in place.

C A satisfactory emergency plan must provide an adequate opportunity for both the permanent and transient adult population to become aware of appropriate steps to take in an emergency.

D The requirement that there be an emergency planning pamphlet is an intrinsic part of the regulatory scheme requiring a prompt notification system. Its purpose is to give residents and transients the information they need to respond to audible alarm systems and to be sufficiently knowledgeable to understand the importance of responding.

LBP-82-60A SOUTHERN CALIFORNIA EDISON COMPANY, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), Docket Nos. 50-361-OL, 50-362-OL; OPERATING LICENSE; August 6, 1982; MEMORANDUM AND ORDER

A The Licensing Board decides that the utility of the further proceedings it had contemplated on the need for medical arrangements in the offsite emergency planning has been called into question by an Appeal Board ruling indicating that such arrangements are not necessary. The Board calls for comments from the parties on whether further proceedings may actually produce a better record on the question of need for medical services offsite.

LBP-82-61 CONSOLIDATED EDISON COMPANY OF NEW YORK (Indian Point, Unit No. 2) and POWER AUTHORITY OF THE STATE OF NEW YORK (Indian Point, Unit No. 3), Docket Nos. 50-247-SP, 50-286-SP; SPECIAL PROCEEDING; August 9, 1982; MEMORANDUM AND CERTIFICATION

A The Licensing Board seeks further Commission guidance concerning the Commission's July 27, 1982 Memorandum and Order (CLI-82-15, 16 NRC 27) directing the Board to reconsider its rulings on contentions.

B The Licensing Board requests Commission guidance as to whether it should require that any proffered testimony on risk treat both the consequences and the probability of accidents; or whether it may admit testimony on consequences (or probability) alone if testimony on probability (or consequences) is received from some other source.

C The Licensing Board requests Commission guidance as to whether it should continue to hear evidence on certain emergency planning questions posed by the Commission in light of the decision of the NRC Regional Administrator to require licensees pursuant to 10 CFR §50.54 to cure significant deficiencies in their emergency plans as identified by the Federal Emergency Management Agency.

LBP-82-62 ARIZONA PUBLIC SERVICE COMPANY, et al. (Palo Verde Nuclear Generating Station, Units 1, 2 and 3), Docket Nos. STN-50-528-OL, STN-50-529-OL, STN-50-530-OL; OPERATING LICENSE; August 12, 1982; MEMORANDUM AND ORDER

A The Licensing Board issues a Memorandum and Order denying Intervenor's Petition for directed certification of two evidentiary rulings made during the operating license proceeding.

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B The availability of directed certification is an exception to the Commission's general rule against interlocutory appeals (10 CFR 2.730(f)) and, as such, is to be resorted to only in "exceptional circumstances." Consumers Power Company (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603, 606 (1977).

C The D.C. Circuit's opinion in Natural Resources Defense Council v. NRC, 685 F.2d 459 (D.C. Cir 1982) does not affect this proceeding in such a manner as to present a "novel question of policy or law" under 10 CFR Part 2, Appendix A(V)(f)(4).

LBP-82-63 CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2), Docket Nos. 50-329-OM&OL, 50-330-OM&OL; MODIFICATION ORDER AND OPERATING LICENSE; August 14, 1982; PREHEARING CONFERENCE ORDER

A The Licensing Board issues a Prehearing Conference Order ruling on contentions submitted following issuance of the Staff's Safety Evaluation Report (SER) and Draft Environmental Statement (DES).

B Where contentions are filed after 15 days prior to the special prehearing conference, those contentions are considered as late-filed and may be admitted only upon a balancing of all of the five factors listed in 10 CFR §2.714(a)(1). Where "good cause" for failure to file on time (factor i) has not been demonstrated, a contention may still be accepted, but the burden of justifying acceptance of a late contention on the basis of the other factors is considerably greater.

C Newly arising information has long been recognized as providing "good cause" for acceptance of a late contention. Indiana and Michigan Electric Co. (Donald C. Cook Nuclear Plant, Units 1 and 2), CLI-72-75, 5 AEC 13, 14 (1972); Cincinnati Gas and Electric Co., et al. (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 574 (1980), appeal dismissed, ALAB-595, 11 NRC 860 (1980).

D Where nontimely contentions arise from the Three Mile Island Unit 2 accident, or the Commission's regulatory response to that accident, a Licensing Board must not only balance the factors in 10 CFR §2.714(a)(1) but also must take into account the Commission's December 18, 1980 Statement of Policy on that subject. CLI-80-42, 12 NRC 654.

E The proponent of a late-filed contention should affirmatively address the five factors in 10 CFR §2.714(a)(1) and demonstrate that, on balance, the contention should be admitted. In considering that showing, a Board may take into account the circumstance that a pro se intervenor is involved.

F Insofar as timeliness is concerned, the standards for evaluating the acceptability of late-filed contentions are the same as those for evaluating the admissibility of an untimely intervention petition — i.e., the standards appearing in 10 CFR §2.714(a)(1).

G Dissatisfaction with the performance of another party (including the Staff) upon whom one had been relying cannot serve as an acceptable justification for an untimely intervention or for the late filing of a contention.

H In considering the admissibility of contentions, a Licensing Board cannot resolve factual questions going to the merits of a contention. Houston Lighting and Power Co. (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 547-49 (1980).

I It is unreasonable to expect an intervenor to examine reports of incidents at various reactors and file contentions based on them at a time when it is not known how or whether the lessons of that incident are incorporated into the reactor under consideration.

J When a matter is involved in rulemaking, the Commission may elect to require an issue which is part of that rulemaking to be heard as part of that rulemaking. Where it does not impose such a requirement, an issue is not barred from being considered in adjudications being conducted at that time. Furthermore, rulemaking does not preclude litigation of a contention questioning an applicant's compliance with an interim rule in effect during the pendency of the rulemaking proceeding.

K "Sunk costs" are not appropriately considered in an operating license cost-benefit balance.

L Effective March 31, 1982, the Commission eliminated entirely requirements for financial qualifications review for, inter alia, electric utilities applying for operating licenses. This amendment is applicable to ongoing proceedings and requires dismissal of previously accepted financial qualifications contentions.

LBP-82-64 GENERAL ELECTRIC CO. (Vallecitos Nuclear Center — General Electric Test Reactor, Operating License No. TR-1), Docket No. 50-70-SC; SHOW CAUSE; August 16, 1982; INITIAL DECISION

A In this Show Cause proceeding to establish seismic and geologic design bases for the site and to determine whether the shutdown GE test reactor can withstand them, the Licensing Board majority issues an initial decision accepting the design bases proposed by licensee and NRC Staff, and authorizes a restart of the facility as structurally modified. In a separate opinion, the Board Chairman disagrees with the geologic design basis, questions some of the expert evidence offered at hearing, and would authorize a restart of the facility only with a further modification.

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B The following technical issues are discussed: Ground faulting — evidence of offsets, estimates of surface offset, probability of offset, fault deflection; Ground motion — peak accelerations, effective peak acceleration, combined with surface offset, vertical accelerations; Structural capacity — cantilever loading, lack of containment integrity.

LBP-82-65 COMMONWEALTH EDISON COMPANY (Dresden Station, Units 2 and 3), Docket Nos. 50-237-SP, 50-249-SP; SPENT FUEL POOL AMENDMENT; August 17, 1982; FINAL INITIAL DECISION

A The Licensing Board's final initial decision authorizes the issuance of appropriate license amendments to permit replacement of the current spent fuel storage racks in each of the Dresden Units 2 and 3 spent fuel pools with 33 high-density storage racks. The conditions and commitments set forth in the partial initial decision (LBP-81-37, 14 NRC 708 (1981)) are carried forward with this decision. At present, reracking is the safest and least costly alternative for meeting requirements for spent fuel storage.

B The following technical issues are discussed: Alternatives to reracking, relevance of unresolved safety issues to the spent fuel pool modification; validity of mathematical analyses of loads imparted to pool floor during postulated rocking of racks during seismic events.

LBP-82-66 LOUISIANA POWER AND LIGHT COMPANY (Waterford Steam Electric Station, Unit 3), Docket No. 50-382-OL; OPERATING LICENSE; August 17, 1982; MEMORANDUM AND ORDER

A The Licensing Board reopens the record in view of applicant's failure to submit as evidence an informational brochure, whose adequacy was in contention.

B The pre-emergency public information program (10 CFR §50.47(b)(7)) is neither minor nor insignificant. A proper program will avoid chaotic public response to an emergency and minimize risk to the public. Southern California Edison Company, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-39, 15 NRC 1163, 1203 (1982).

C The form and content of informational brochures drafted to satisfy the pre-emergency public information requirement of NRC regulations (10 CFR §50.47(b)(7)) are not so clearly established by regulations that compliance therewith is a matter of course. See, e.g., Cincinnati Gas & Electric Company, et al. (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-48, 15 NRC 1549, 1602 (1982); Consumers Power Company (Big Rock Point Plant), LBP-82-60, 16 NRC 540, 545-46 (1982).

D The opinions of applicant's witnesses that an informational brochure, not submitted as evidence, would meet the Commission's emergency planning requirements are not an adequate substitute for Licensing Board examination of the actual brochure; such secondary sources, even when bolstered by the NRC Staff's and FEMA's assurance of a subsequent review, do not constitute "reasonable assurance" that the pre-emergency public information program will be properly implemented. See Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-580, 11 NRC 227, 228-31 (1980).

E The term "reasonable assurance" requires more than a mere checklist comparison against regulatory criteria. Southern California Edison Company, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-81-36, 14 NRC 691, 699 (1981). The term connotes the existence of a reasonable plan. Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1, 18 (1978). The reasonableness of a plan cannot be determined when the essential elements of that plan are indeterminate.

F The adequacy of the pre-emergency public information program is a significant issue that calls for subjective evaluation; delegation of this determination would be improper.

LBP-82-67 CLEVELAND ELECTRIC ILLUMINATING COMPANY, et al. (Perry Nuclear Power Plant, Units 1 & 2), Docket Nos. 50-440-OL, 50-441-OL; OPERATING LICENSE; August 18, 1981; ORDER

A The Licensing Board resolves a motion to compel answers to interrogatories. Applicants are not required to respond to interrogatories concerning the ingestion pathway emergency planning zone, which is not relevant to the admitted contention about the evacuation EPZ. However, applicants are required to respond to all questions relevant to evacuation, including: (1) the use of resources on-site that might also be needed off-site, (2) the ability of responsible individuals promptly to recognize emergency conditions, (3) the assignment of administrative responsibility for maintaining the prompt alert and notification system, (4) meteorological and radiation release monitoring, and (5) the qualification and training of individuals responsible for communicating with off-site agencies about emergency conditions.

B Applicants must provide a reasonably complete response to interrogatories. Their answers should not require the sifting of materials to obtain a complete answer but they may describe precisely the portions of documents that contain the requested information.

C Questions about applicant utility's financial qualifications for fulfilling its emergency planning responsibilities are beyond the scope of an operating license proceeding.

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D Under a contention concerning the possible need for an automatic standby liquid control system, applicant must answer questions about the comparative advantages and disadvantages of that system compared to a manual standby liquid control system.

E Other interrogatories discussed by the Board concerned various aspects of emergency planning (NUREG-0654 criteria, initiating conditions, administrative responsibility, financial responsibility, meteorological monitoring, radiological monitoring, communications).

LBP-82-68 THE CINCINNATI GAS & ELECTRIC COMPANY, et al. (Wm. H. Zimmer Nuclear Power Station, Unit 1), Docket No. 50-358-OL; OPERATING LICENSE; August 24, 1982; MEMORANDUM AND ORDER

A Acting on Applicants' Motion for Reconsideration and Clarification of the June 21 Initial Decision, LBP-82-48, 15 NRC 1549 (1982), the Licensing Board: (1) authorizes the issuance of a license permitting fuel loading, low power testing, and operation not in excess of 5% of rated power subject to the condition that the authorization will be revoked should the Commission, on reconsideration, reverse its order in CLI-82-20, 16 NRC 109 (1982), which required the dismissal of eight safety-related contentions; and (2) denied Applicants' relief from further proceedings ordered in the Initial Decision with respect to emergency evacuation of schools and submission of FEMA findings.

B Where a licensing board finds that all matters in contention, other than those relating to NRC and FEMA review of offsite emergency preparedness, have been resolved either favorably to applicant or through the issuance of appropriate license conditions, it may, pursuant to 10 CFR §50.47, as amended (47 Fed. Reg. 30232 [July 13, 1982]), authorize the Director of Nuclear Reactor Regulation to issue a license authorizing fuel loading and low power operations not in excess of 5% of rated power. Authorization of the issuance of such a license by the Director, upon his making all requisite findings, may be made even in the absence of a motion by the applicant pursuant to 10 CFR 50.57(c) for a low power license.

C Pursuant to 10 CFR §50.47(a)(1), the NRC must find, prior to the issuance of a license for the full power operation of a nuclear reactor, that the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In accordance with 10 CFR §50.47(a)(2) the Commission is to base its finding on a review of the Federal Emergency Management Agency's (FEMA's) "findings and determinations as to whether state and local emergency plans are adequate and capable of being implemented," and on a review of the NRC Staff assessment of applicant's onsite emergency plans.

D Pursuant to 10 CFR §50.47(a)(2), a FEMA finding as to the status of offsite emergency planning preparedness will constitute a rebuttable presumption on the question of the adequacy of such plans. Based upon existing precedent, it is unclear whether this presumption attaches only to FEMA's final formal findings on the state of offsite emergency preparedness, or whether such a presumption may be accorded to preliminary or interim FEMA findings.

E As a rebuttable presumption dissolves in the face of reliable and probative evidence to the contrary, the practical effect of any rebuttable presumption created by 10 CFR §50.47(a)(2) would be of little moment with regards to contested aspects of FEMA's findings, leaving a licensing board free to weigh the testimony of each party on its own merits. See Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 NRC 1211, 1465 (1981).

F A licensing board must base its findings on the status of offsite emergency preparedness, pursuant to 10 CFR §50.47(a)(2), on FEMA's testimony as to its review of those portions of the state and local plans related to the contentions, as viewed in light of other testimony adduced at hearing. While a licensing board may rely on testimony based on FEMA's interim findings in making its own findings, it need not be satisfied with testimony so preliminary and conclusory as to fail to meet the same standards expected of other testimony in Commission proceedings. To do so would deprive both the board and parties of any meaningful opportunity to cross-examine FEMA witnesses as to the bases for the Government's conclusions.

G A licensing board may not delegate to the NRC Staff, or to FEMA, its obligation to resolve issues placed into controversy in an operating license proceeding, however conscientiously they may pursue their work. See Cleveland Electric Illuminating Company, et al. (Perry Nuclear Power Plant, Units 1 and 2), ALAB-298, 2 NRC 730, 736-737 (1975); Public Service Company of Indiana, Inc. (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-461, 7 NRC 313, 318 (1978); Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59; 14 NRC 1211, 1419 (1981). To do so would be a clear violation of section 189 of the Atomic Energy Act of 1954, as amended, as it would render the hearing process a nullity.

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H Where FEMA testimony based upon its interim findings as to the state of offsite emergency planning is so preliminary and conclusory as to fail to permit meaningful cross-examination of Government witnesses as to the bases for their conclusions, it is appropriate for a board to permit reopening of the record on offsite emergency planning matters upon a lesser showing of good cause than that which is ordinarily required to reopen a record. Such a showing shall be based upon particular parts of the final FEMA findings and the Staff's final supplement to its Safety Evaluation Report which relate to admitted contentions, and shall demonstrate that an opportunity for cross-examination, as distinguished, for example, from an opportunity for further written comment, is required for a full and true disclosure of the facts.

I A motion for reconsideration must state specifically the respects in which an initial decision is erroneous. See 10 CFR §2.771. It will not suffice to allege that a decision has had an unintended effect, without specifying how the board is supposed to have erred in reaching its findings. If reasons now exist justifying a different result, they must be presented on the record, not in the form of an unsworn memorandum of law from counsel, which is not evidence.

LBP-82-69 CLEVELAND ELECTRIC ILLUMINATING COMPANY, et al. (Perry Nuclear Power Plant, Units 1 & 2), Docket Nos. 50-440-OL, 50-441-OL; OPERATING LICENSE; August 30, 1982; MEMORANDUM AND ORDER

A In this Memorandum and Order the Board rules that it cannot go beyond the Commission's Statement of Policy on psychological stress issues (47 Fed. Reg. 31762, July 16, 1982) because the Statement had the effect of depriving it of jurisdiction over the intervenor's psychological stress contention. It also ruled that certification of the issue to the Commission was not proper because intervenor had failed to show why interlocutory review was necessary rather than review, in due course, upon appeal.

B When a policy statement issued by the Commission orders licensing boards not to consider psychological stress contentions unless they meet specified criteria, boards are deprived of jurisdiction over such issues and are prohibited from inquiring into the procedural regularity of the policy statement.

C A party may not obtain certification of an issue unless it demonstrates that it will suffer substantial harm if it is deprived of interlocutory review and is compelled to await completion of the licensing board's action before it pursues an appeal.

LBP-82-70 PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-275-OL, 50-323-OL; OPERATING LICENSE; August 31, 1982; INITIAL DECISION

A In this Initial Decision, the Licensing Board authorizes the issuance of a full power operating license for the Diablo Canyon Nuclear Power Plant, Units 1 and 2, subject to certain conditions specified by the Board and with the caveat that the decision not impinge on the status of the Commission's previously ordered suspension of the plant's low-power license or on the independent design verification program ordered by the Commission.

B Pressurizer heaters are not required to be designed and constructed to "safety-grade" standards by either Commission requirements or by the standards of 10 CFR Part 100, Appendix A, III.(a).

C Power-operated relief valves, when used to protect a system against low-temperature overpressurization, must be designed and constructed to "safety-grade" standards.

D State and local governments have the responsibility to set emergency planning zones around nuclear power plants. The zones may be geographically larger than those specified in the Commission's rules, however, Commission rules govern the test of adequacy of emergency planning.

E An early warning System must be capable of notifying essentially 100 percent of a population within 5 miles of a nuclear power plant within 15 minutes. Essentially 100 percent of the population within the entire EPZ must be notified within 45 minutes.

F Formal FEMA findings on the adequacy of offsite emergency planning are required prior to license issuance but are not required for the hearing.

LBP-82-71 PHILADELPHIA ELECTRIC COMPANY (Limerick Generating Station, Units 1 and 2), Docket Nos. 50-352, 50-353; OPERATING LICENSE; September 2, 1982; MEMORANDUM AND ORDER

A The Licensing Board denies a motion to admit a contention concerning psychological stress caused by viewing a cooling tower plume because the Licensing Board is not authorized by the Commission to admit such a contention, the contention is without basis, and the motion was not timely.

B As required by the Commission's policy statement of July 22, 1982 (47 Fed. Reg. 31762), a Licensing Board is without authority to admit a contention alleging that psychological stress will result from the operation of a nuclear plant when no serious nuclear accident has occurred at the site.

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C A contention alleging that psychological stress will result from operation of a nuclear power plant may not be litigated if it is without basis even if it otherwise satisfied the Commission's criteria for admitting psychological stress contentions.

LBP-82-72 PHILADELPHIA ELECTRIC COMPANY (Limerick Generating Station, Units 1 and 2), Docket Nos. 50-352, 50-353; OPERATING LICENSE; September 3, 1982; MEMORANDUM AND ORDER

A The Licensing Board reaffirms its holding that a preclusion clause in the Delaware River Basin Compact renders the Licensing Board without jurisdiction to reassess the impacts of an allocation of water from the Delaware River made by the Delaware River Basin Commission.

B Pursuant to section 15.1(s)(1) of the Delaware River Basin Compact, the Licensing Board is precluded from reassessing the impacts of a decision by the Delaware River Basin Commission, concurred in by the Federal member of the Commission, allocating water from the Delaware River for the cooling of a nuclear plant.

LBP-82-73 LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station Unit 1), Docket No. 50-322-OL; OPERATING LICENSE; September 3, 1982; MEMORANDUM AND ORDER

A Ruling on the effects of potential conflicts of interest which the Board had noted because applicant's contractor for its probabilistic risk assessment had also served as a subcontractor for the NRC Staff on certain aspects of the Staff's systems interaction program, the Licensing Board concludes that in the interest of fundamental fairness to all parties, the Staff should have noted the existence of such potential conflicts of interest on the record, together with a description of any steps taken to avoid or mitigate their effects. However, in the circumstances of this case, the Board holds that any defects in the fairness of this proceeding were cured by the Board's discovery and disclosure of this potential conflict of interest, which gave all parties the opportunity for cross-examination on this point, and by the Staff's obvious lack of reliance on its subcontractor's views in its testimony in this proceeding.

B Parties to Commission proceedings have the obligation to disclose all potential conflicts of interest, whether or not a party believes them to be material and relevant to a licensing proceeding. Such disclosure permits other parties the opportunity to cross-examine opposing witnesses regarding any bias which may be alleged to exist as a result of a potential conflict of interest.

C Fundamental fairness dictates that parties to Commission proceedings disclose all potential conflicts of interest, whether or not a party believes them to be material and relevant to a licensing proceeding. While the "materiality and relevance" of new information is required to be considered in determining whether a party has a duty to disclose such new information in an NRC proceeding, Tennessee Valley Authority (Browns Ferry Nuclear Plant, Units 1, 2 and 3), ALAB-677, 15 NRC 1387 (1982); Duke Power Co. (McGuire Nuclear Station, Units 1 and 2), ALAB-143, 6 AEC 623, 625 (1973), these standards are not applicable in a situation where there is an issue as to the fundamental fairness of the conduct of parties to a proceeding. Fundamental fairness clearly requires the disclosure of potential conflicts of interest, such that, after opposing parties have had an opportunity for cross-examination, the Board may determine the materiality of such information.

LBP-82-74 PUGET SOUND POWER AND LIGHT COMPANY, et al. (Skagit/Hanford Nuclear Power Project, Units 1 and 2), Docket Nos. 50-522, 50-523; CONSTRUCTION PERMIT; September 3, 1982; MEMORANDUM AND ORDER

A The Licensing Board rules on the disposition of two late-filed petitions to intervene in this proceeding, denying the petition filed by the Columbia River Inter-Tribal Fish Commission (CRITFC) for lack of standing and granting the petition filed by the Yakima Indian Nation, subject to the requirement that at least one contention acceptable under 10 CFR §2.714(b) be filed.

B An organization may represent only its own members. Long Island Lighting Company (Shoreham Nuclear Power Station, Unit 1), LBP-77-11, 5 NRC 481, 483 (1977). The requirements for standing, injury in fact and an interest "arguably within the zone of interest" protected by the statute, must be fulfilled by the organization itself through its own membership. Portland General Electric Company, et al. (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613 (1976).

C An untimely petition to intervene may be granted if it is found that a balancing of the five factors set forth in 10 CFR §2.714(a)(1) favors intervention. Some weight may be attached to the fact that the lateness, though not justified, is not extreme and will not delay the proceeding. Duke Power Company (Amendment to Materials License SNM-1773 — Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-528, 9 NRC 146, 150 (1979).

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D 10 CFR §2.714(b) requires a petitioner for intervention to file a supplement containing at least one admissible contention. Cincinnati Gas and Electric Company, et al. (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 571 (1980).

LBP-82-75 LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station, Unit 1), Docket No. 50-322-OL; OPERATING LICENSE; September 7, 1982; SUPPLEMENTAL PREHEARING CONFERENCE ORDER

A The Licensing Board issues its Supplemental Prehearing Conference Order ruling on intervenors' "Phase One Consolidated Emergency Planning Contentions," which primarily relates to Applicant's onsite emergency planning efforts.

B Pursuant to 10 CFR §2.707, a licensing board is empowered on the failure of a party to comply with a prehearing conference order to "make such orders in regard to the failure as are just." Based upon the Appeal Board's ruling in Commonwealth Edison Company (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400 (1982) the out-of-hand dismissal of intervenors' proposed contentions solely for failing to either further particularize certain contentions or to pursue settlement negotiations is unwarranted. A more appropriate course of action in such a case is to simply rule on intervenors' proposed contentions as they now stand, dismissing those which lack adequate bases and specificity.

C Pursuant to 10 CFR §2.714, an intervenor must set forth those matters which it seeks to litigate "with reasonable basis and specificity." This power of the Commission to require that intervenors make such a threshold showing prior to the admission of a contention has been upheld by the Federal Courts. See BPI v. Atomic Energy Commission, 502 F.2d 424, 428-429 (D.C. Cir. 1973).

D A contention alleging an entire emergency response plan to be inadequate, in that it fails to consider certain matters, is required pursuant to 10 CFR §2.714 to specify the way in which identified portions of the plan are alleged to be inadequate. In advancing such a contention, it is intervenors' obligation to assert how the identified portions of an emergency plan are rendered inadequate by its failure to consider such matters.

E Pursuant to 10 CFR §50.47(b)(12), emergency response plans for nuclear power reactors must include arrangements for "contaminated injured" individuals. As interpreted by the Appeal Board in Southern California Edison Company, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-680, 16 NRC 127, 137 (1982) "contaminated injured" is a distinct category of injury, encompassing potential patients whose traumatic (i.e., physical) injuries are complicated by radioactive contamination. People who suffer radiation injury, without accompanying traumatic injury, are unlikely to need emergency treatment because the clinical course of radiation injury unfolds over time and is seldom, if ever, life-threatening. Thus, for a serious nuclear accident to result in the hospitalization of large numbers of people, not only must an already unlikely accident be severe, but also the emergency response to protect the public must be ineffectual. But see Southern California Edison Company, et al. (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-82-27, 16 NRC 883 (1982).

LBP-82-76 PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, et al. (Seabrook Station, Units 1 and 2), Docket Nos. 50-443-OL, 50-444-OL (ASLBP No. 82-471-02-OL); OPERATING LICENSE; September 13, 1982; MEMORANDUM AND ORDER

A The Licensing Board rules on petitions to intervene and admission of contentions, and schedules further proceedings.

LBP-82-77 CONSUMERS POWER COMPANY (Big Rock Point Plant), Docket No. 50-155; SPENT FUEL POOL AMENDMENT; September 14, 1982; INITIAL DECISION

A In this Initial Decision, the Licensing Board holds that the applicant must carry the burden of proof in demonstrating that the off-site emergency plan has complied with the Commission's emergency planning rules and guidance. It must carry that burden whether or not it is primarily responsible for performing the functions involved in the plan. Because applicant did not carry that burden, it must demonstrate to the Board that the deficiencies in its plan have been remedied, are not serious, or are being remedied through adequate interim compensating actions. The deficiencies include failures of proof related to the training of local officials or school officials, the need for transportation of persons who lack personal vehicles, the availability of a satisfactory method of alerting school bus drivers who are not on duty, that there is adequate transportation for schoolchildren, that there is an adequate list of invalids being maintained and that there is an adequate method of establishing emergency bus routes.

B Intervenor's contention that applicant had not implemented adequate administrative controls to prevent cask drops over the spent fuel pool was dismissed for lack of merit.

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C Applicant has the burden of proof to demonstrate that the off-site emergency plan complies with Commission rules and guidance. The burden must be carried whether or not applicant is primarily responsible for carrying out a particular aspect of the plan.

D A Licensing Board prescribes procedures by which applicant may remedy deficiencies in its case concerning the adequacy of emergency planning.

E The following technical issues are discussed: Emergency planning (estimating training needs); emergency planning; administrative controls (cask drops).

LBP-82-78 CONSUMERS POWER COMPANY (Big Rock Point Plant), Docket No. 50-155; SPENT FUEL POOL AMENDMENT; September 15, 1982; INITIAL DECISION

A In this Initial Decision, the Licensing Board finds that an environmental impact assessment, prepared with respect to an amendment to expand the capacity of a spent fuel storage pool, was adequate. Intervenors did not successfully challenge its negative findings concerning the lack of any significant environmental impacts.

B Additionally, the Board finds that the environmental impact assessment adequately treated alternatives to the spent fuel when it found that the pool modification "will not result in any significant change in the commitment of water, land and air resources" and when it also found that the use of stainless steel to fabricate new fuel racks is an "insignificant" use of that resource. Intervenor also failed to make an effective challenge to this Staff's basis for this finding.

C An environmental impact appraisal prepared with respect to the expansion of the capacity of a spent fuel pool need not discuss further the alternatives to an expansion of the pool if the appraisal has an adequate basis for finding that the expansion would not cause any unresolved conflicts about alternative uses of resources.

D An environmental impact statement need not be prepared with respect to the expansion of the capacity of a spent fuel pool if the environmental impact appraisal prepared for the project had an adequate basis for concluding that the expansion of a spent fuel pool would not cause any significant environmental impact.

LBP-82-79 CLEVELAND ELECTRIC ILLUMINATING COMPANY, et al. (Perry Nuclear Power Plant, Units 1 & 2), Docket Nos. 50-440-OL, 50-441-OL; OPERATING LICENSE; September 15, 1982; MEMORANDUM AND ORDER

A The Licensing Board denies admission of a contention on dose levels to human beings from routine emissions from the Perry plant because the intervenor failed to show good cause for late filing. Intervenor had argued that the issue could be raised because it had appeared for the first time in the Draft Environmental Statement for Perry, but intervenor had no answer for the opposing argument that the same matter had been raised in the Final Safety Analysis Report, issued months earlier.

B The Board also considered whether to raise this issue sua sponte but it concluded that the Commission had already considered the matter in several earlier proceedings and that sua sponte consideration was not appropriate.

C Discussion of an issue in the Draft Environmental Statement does not provide good cause for late filing of a contention, if the same material was included in the Final Safety Analysis Report (FSAR) filed by the applicant.

If a contention is excluded from a proceeding because there is no good cause for late filing, the Board should nevertheless consider whether to declare the issue to be an important safety or environmental issue and to raise that issue sua sponte.

LBP-82-80 LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station, Unit 1), Docket No. 50-322-OL-2 (ASLBP No. 82-478-05-OL); SECURITY; September 16, 1982; MEMORANDUM, ORDER AND NOTICE OF SECOND IN CAMERA CONFERENCE OF COUNSEL

A Upon referral from the Commission, the Licensing Board authorizes the release to two of intervenor's security consultants/experts of two portions of a restricted Appeal Board decision [Diablo Canyon, ALAB-653 (1981) (Restricted)] regarding the definition of design basis threat and interpretation of regulations concerning the appropriate number of armed responders.

B Intervenor county government established requisite need of two of its security consultants/experts for access to two portions of restricted Appeal Board decision regarding definition of design basis threat and number of armed responders, even though those portions also contain minimal amount of specific information concerning security plan at another nuclear plant.

C Where Commission previously authorized release of two portions of restricted Appeal Board decision to attorneys for intervenor county government, the same portions of that decision will be released to intervenor's consultants/experts who have filed testimony on the areas discussed in the Appeal Board decision.

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D Release of portions of restricted Appeal Board decision to intervenor's consultants/experts will be conditioned upon their execution of affidavits of non-disclosure of the plant physical security information contained in that decision.

E Security plans for nuclear plants are deemed to be commercial or financial information pursuant to 10 CFR §2.790(d) and may only be disclosed to counsel and expert witnesses who have a need to know after application of a balancing of interests test.

LBP-82-81 DUKE POWER COMPANY (Perkins Nuclear Station, Units 1, 2 and 3, Docket Nos. STN-50-488, STN-50-489, STN-50-490; CONSTRUCTION PERMIT; September 20, 1982; MEMORANDUM AND ORDER AUTHORIZING WITHDRAWAL OF APPLICATION FOR CONSTRUCTION PERMIT WITHOUT PREJUDICE

A The Licensing Board authorizes the withdrawal without prejudice of the application for construction permits for the Perkins Nuclear Station, denies Intervenors' motion to dismiss the Perkins application with prejudice, and denies the Intervenors' request for attorney's fees and litigation expenses.

B Licensing Boards under 10 CFR 2.707(a) may authorize the withdrawal of an application after the notice of hearing has issued on such terms as it may prescribe, but any terms prescribed must be related to any legal harm to parties or the public that a withdrawal would cause.

C Federal rules favor withdrawal without prejudice where no party will be harmed thereby. The possibility of another hearing on the application standing alone does not constitute legal harm, and does not in itself justify a conditional withdrawal. Fed. R. Civ. P. 41(a)(1), (2); LeCompte v. Mr. Chip, Inc., 528 F.2d 601, 604 (5th Cir. 1976).

D A Licensing Board may attach reasonable conditions on a withdrawal without prejudice to protect parties and public from legal harm; or if legal harm is unavoidable, the Licensing Board may order a dismissal with prejudice but only to the extent necessary to avoid legal harm.

E The Applicant would have the option of selecting reasonable conditions on a withdrawal without prejudice, including the payment of intervenors' attorney's fees, or a withdrawal with prejudice as to specific issues. Yoffe v. Keller Indus., Inc., 580 F.2d 126, 131, n.13 (5th Cir. 1978).

F A distinction must be made between the American rule which bars an award of attorney's fees to the prevailing party absent a specific statute authorizing payment, as reconfirmed in Alyeska Pipeline Serv. v. Wilderness Soc., 421 U.S. 240 (1975), and requiring the reimbursement of attorney's fees as a condition of withdrawal of an application without prejudice. The latter is not an award for winning anything, but is to save a party from the expense and effort of preparing a defense twice because of the withdrawal without prejudice.

G There is nothing about NRC practice and regulations which bars the payment of money as a condition for withdrawal of an application without prejudice.

H An unusual situation prevails in an NRC proceeding with respect to a dismissal in that (1) it is a mandatory licensing proceeding, not a simple adversary litigation, and (2) the dismissal is sought after a hearing and decision on the merits.

I Where an intervenor has lost on the merits of an issue, it will suffer no legal harm from a dismissal of an application without prejudice, because the worst that can beset an intervenor in that case is that it will be afforded an unearned second opportunity to prevail on the issue.

J Intervenors have standing to seek a dismissal with prejudice and attorney's fees. Subsumed in the right to intervene with NRC proceedings is the right to enjoy the benefits of the ensuring litigation; to preserve any victory for later use in a renewed litigation, or to be saved from legal harm if the need arises again to litigate an issue upon which intervenors prevailed.

LBP-82-82 LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station, Unit 1), Docket No. 50-322-OL (Emergency Planning); OPERATING LICENSE; September 22, 1982; MEMORANDUM AND ORDER RULING ON LILCO'S MOTION TO COMPEL DISCOVERY OF SUFFOLK COUNTY EMERGENCY PLANNING DOCUMENTS

A The Licensing Board rules on claims of attorney-client, work product and executive privileges asserted by a governmental intervenor in opposition to two discovery requests from applicant for the production of certain emergency planning documents.

B Pursuant to 10 CFR §2.741(d), the party upon whom a request for the production of documents is served must serve upon the requesting party, within 30 days after service of the request, a response stating either that the requested inspection and copying will be permitted, or stating reasons why the requested discovery is objectionable. Pursuant to 10 CFR §2.740(f)(1), an evasive or incomplete answer or response shall be treated as a failure to answer or respond.

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C A party opposing a discovery request need not seek a protective order, pursuant to 10 CFR §2.740(c), so long as he does respond to the request by objecting. In ruling upon a motion to compel made in accordance with §2.740(f), however, a board is empowered to make such a protective order as it would make upon a motion made pursuant to §2.740(c). A party objecting to the production of a document on grounds of privilege therefore has the obligation to specify in its response to a document request those same matters which it would be required to set forth in attempting to establish "good cause" for the issuance of a protective order.

D What constitutes "good cause" for the issuance of a protective order depends upon the kind of protective order being sought. In order to show good cause for the issuance of a protective order, pursuant to 10 CFR §2.740(c), to avoid the disclosure of documents for which an evidentiary privilege is claimed, a party must specifically designate and describe (1) the documents claimed to be privileged, (2) the privilege being asserted and (3) the precise reasons why the party believes the privilege to apply to such documents.

E A party asserting certain documents to be privileged from discovery must bear the burden of proving that it is entitled to such protection, see In re Fischel, 557 F.2d 209 (9th Cir. 1977), and this includes pleading such claims adequately in its response. Claims of privilege must be specifically asserted with respect to particular documents, and may not be raised by blanket objection that all matters which could fit a particular document request are privilege. See United States v. El Paso Company, No. 81-2484 (5th Cir. August 13, 1982); United States v. Davis, 636 F.2d 1028, 1044, n.20 (5th Cir. 1981). This is because discovery privileges are not absolute, and may or may not apply to a particular document, depending upon a variety of circumstances.

F It is not sufficient for a party asserting certain documents to be privileged from discovery to await a motion to compel from the party seeking discovery prior to setting forth its assertions of privilege and identifying those matters which it claims to be privileged. Such a practice places an unfair burden upon the party seeking discovery and occasions unnecessary delays. Claims of privilege are untimely unless asserted in the response to the discovery request.

G Pursuant to 10 CFR §2.740(b)(1), parties may generally obtain discovery "regarding any matter, not privileged, which is relevant to the subject matter in the proceeding. . . ." While the only discovery privilege codified in the NRC regulations is the work production doctrine, the Commission decision to model §2.740(b) after Rule 26(b) of the Federal Rules of Civil Procedure implicitly adopted those privileges which have been recognized by Federal Courts interpreting Rule 26(b).

H While the Federal Rules of Civil Procedure are not themselves directly applicable to practice before the Commission, judicial interpretation of a Federal Rule can serve as guidance for the interpretation of a similar or analogous NRC discovery rule. Toledo Edison Company, et al. (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 760 (1975); Cincinnati Gas & Electric Company, et al. (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-47, 15 NRC 1538, 1542 (1982).

I The purpose of the attorney-client privilege is to encourage full and frank communication between attorneys and their clients and thereby promote broader public interests in the observance of law and administration of justice. Upjohn Co. v. United States, 449 U.S. 383, 389 (1981). An attorney's involvement in, or recommendation of a transaction does not place a cloak of secrecy around all incidents of such a transaction. In re Fischel, 557 F.2d 209, 212 (9th Cir. 1977). The attorney-client privilege does not protect disclosure of the underlying facts communicated to the attorney. Upjohn, 449 U.S. at 395. A communication from the attorney to the client should be privileged only if the client had a reasonable expectation in the confidentiality of the statement, if it was necessary to obtain informed legal advice and might not have been made absent the privilege. Ohio-Sealy Mattress Manufacturing Company v. Kaplan, 9 F.R.D. 21, 28 (N.D. Ill. 1980).

J The fact that a document is authored by in-house counsel, rather than by an independent attorney, is not relevant to a determination of whether such a document is privileged. In such cases, however, the privilege protects only communications revealing confidences of the client or seeking legal advice, not matters relating solely to the conduct of the client's business. O'Brien v. Board of Education of City School District of City of New York, 86 F.R.D. 548, 549 (S.D.N.Y. 1980); In re Fischel, 557 F.2d 209, 211 (9th Cir. 1977).

K To be privileged from discovery by the work product doctrine, as codified in 10 CFR §2.740(b)(2), a document must be both prepared by an attorney, or by a person working at the direction of an attorney, and prepared in anticipation of litigation. "Ordinary work product," which does not include the mental impressions, conclusions, legal theories or opinions of the attorney or his agents, may be obtained by an adverse party upon a showing of "substantial need of the materials in preparation of his case and that he is unable without undue hardship to obtain the substantial equivalent of the materials by other means." 10 CFR §2.740(b)(2). Opinion work product is not discoverable, so long as the material was in fact prepared by an attorney or his agent in anticipation of litigation, and not assembled in the ordinary course of business, or pursuant to public requirements unrelated to litigation. In re Murphy, 560 F.2d 326, 334-336 (8th Cir. 1977).

L Cases decided under Exemption 5 of the Freedom of Information Act, which relates to inter-agency or intra-agency letters or memoranda, may be looked to for guidance in resolving claims of executive privilege in NRC proceedings related to discovery. While the discovery rules for claims of executive privilege "can only be applied under Exemption 5 by way of rough analogies," EPA v. Mink, 410 U.S. 73, 86 (1973), the similarities between these matters are sufficient such that Exemption 5 cases may be used as guidance, taking a common sense approach which recognizes any differing equities presented in FOIA cases. See Mink, 410 U.S. at 91. FOIA cases, for example, do not consider a party's need for requested documents. NLRB v. Sears, 421 U.S. 132, 149 n.16 (1975). NRC FOIA cases do consider the public interest of such disclosures, however. See Consumers Power Company (Palisades Nuclear Power Facility), ALJ-80-1, 12 NRC 117, 122-126 (1980) and cases cited therein.

M A governmental intervenor does not waive its claims of executive privilege by its participation as a litigant in an NRC proceeding. Consumers Power Company (Palisades Nuclear Power Facility), ALJ-80-1, 12 NRC 117, 127-128 (1980).

N The privilege against disclosure of intragovernment documents containing advisory opinions, recommendations and deliberations is a part of the broader executive privilege. Its purpose is to encourage frank discussions within the government regarding the formulation of policy and the making of decisions. Documents shielded by executive privilege remain privileged even after the decision to which they pertain has been effected, since such disclosure at any time could inhibit the free flow of advice. Federal Open Market Committee of the Federal Reserve System v. Merril, 443 U.S. 340, 360, (1979).

O The executive privilege is a qualified privilege, and does not attach to purely factual communications, or to severable factual portions of communications, the disclosure of which would not compromise military or state secrets. Furthermore, even communications which fall within the protection of the privilege may be disclosed upon an appropriate showing of need. An objective balancing test is used to determine a party's need for such documents, weighing the importance of the documents to the party seeking their production, and the availability elsewhere of the information contained in the documents, against the government interest in secrecy. United States v. Leggett & Platt, Inc., 542 F.2d 655, 658-659 (6th Cir. 1976), cert. denied, 430 U.S. 945 (1977).

LBP-82-83 GENERAL ELECTRIC COMPANY (General Electric Morris Operation), Docket No. 70-1308 (Application to Modify License No. SNM-1265 to Increase Spent Fuel Storage Capacity); OPERATING LICENSE AMENDMENT; September 21, 1982; ORDER GRANTING MOTION TO WITHDRAW APPLICATION AND DISMISSING PROCEEDING WITHOUT PREJUDICE

LBP-82-84 SOUTH CAROLINA ELECTRIC AND GAS COMPANY, et al. (Virgil C. Summer Nuclear Station, Unit 1), Docket No. 50-395-OL; OPERATING LICENSE; September 24, 1982; MEMORANDUM AND ORDER

A The Licensing Board denies intervenor's request for a stay of the initial decision authorizing the issuance of an operating license, and grants intervenor's further request for leave to reply to NRC Staff's and applicants' oppositions to intervenor's request to reopen proceeding.

B In determining whether to grant a stay to reopen the proceeding after the initial decision has issued, the Licensing Board will consider the same four factors specified by 10 CFR §2.788(e) relating to stays pending appeal.

C If an intervenor cannot present his case, the proper method to institute a proceeding by which the NRC would conduct its own investigation is to request action under 10 CFR §2.206. It is not the Licensing Board's function to assist intervenors in preparing their cases and searching for their expert witnesses.

LBP-82-85 PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-275-OL, 50-323-OL; OPERATING LICENSE; September 27, 1982; MEMORANDUM IN RESPONSE TO NRC STAFF'S MOTION FOR CLARIFICATION OF THE LICENSING BOARD'S INITIAL DECISION DATED AUGUST 31, 1982

A In response to an NRC Staff motion, the Licensing Board clarifies certain matters pertaining to its Initial Decision of August 31, 1982.

LBP-82-86 METROPOLITAN EDISON COMPANY (Three Mile Island Nuclear Station, Unit No. 1), Docket No. 50-289; RESTART; September 29, 1982; MEMORANDUM AND ORDER

A The Licensing Board rules that it is without jurisdiction to rule on intervenor's motion to reopen the record after issuance of the Board's initial decision on the subject of the motion.

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B After the issuance of a licensing board's initial decision on a particular issue, exclusive jurisdiction over the issue lies with the appeal board. Section 2.717(a) of the Rules of Practice is reconcilable with §2.718(j) in that the identity of the presiding officer with exclusive jurisdiction over a particular issue changes as the proceeding moves up the appellate ladder. The parties should not be able to bestow jurisdiction on a presiding officer by selecting the tribunal for the relief sought by a motion.

LBP-82-87 TEXAS UTILITIES GENERATING COMPANY, et al. (Comanche Peak Steam Electric Station, Units 1 and 2), Docket Nos. 50-445, 50-446; OPERATING LICENSE; September 30, 1982; ORDER DENYING RECONSIDERATION

A The Licensing Board directs the Staff to identify by name individuals identified by letter of the alphabet in an inspection report which the Staff introduced in evidence, and to produce unexpurgated copies of signed statements taken from those individuals. If the Staff fails either to comply with or seek appellate review of this order, the Licensing Board indicates it will impose sanctions upon Staff counsel.

B Informer's privilege applies only to those who confidentially volunteer information to government officials charged with enforcing a law, not to everyone interviewed during the course of an ensuing investigation.

C A single request for confidentiality cannot be used to shield an entire investigation from scrutiny in an adjudicatory setting.

D It is improper for the NRC Staff to attempt to dictate to the Licensing Board what matters it may or may not consider. The Licensing Board is the sole judge of its informational needs and is not required to act merely as an umpire calling balls and strikes.

E The Licensing Board has the right and duty to develop a full record for decision-making in the public interest. The independence and integrity of licensing boards is fundamental to due process.

F Congress has authorized the NRC to provide hearings upon the request of any person whose interest may be affected by the licensing process and to establish licensing boards to conduct such hearings.

G The Rules of Practice in Part 2 of 10 CFR are the method by which NRC ensures that all parties are provided procedural as well as substantive due process.

H Parties and their representatives are expected to conduct themselves before a licensing board as they would before a court of law.

I A licensing board is empowered to impose sanctions for a party's failure to obey or seasonably appeal from its order, even if the behavior is based upon the party's belief that the order is invalid.

DIGESTS

ISSUANCES OF DIRECTORS' DECISIONS

DD-82-7 PACIFIC GAS & ELECTRIC COMPANY (Humboldt Bay Power Plant, Unit 3), Docket No. 50-133; DECOMMISSIONING; July 7, 1982; DIRECTOR'S DECISION UNDER 10 CFR 2.206

A The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requests action to revoke the operating license for the Humboldt Bay plant and to decommission the facility.

DD-82-8 PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE (Seabrook Nuclear Station, Units 1 & 2), Docket Nos. 50-443, 50-444; SHOW CAUSE; July 6, 1982; DIRECTOR'S DECISION UNDER 10 CFR 2.206

A The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requested initiation of show-cause proceedings on the basis of the licensee's alleged lack of financial qualifications.

B In light of the elimination of the Commission's financial qualification requirements, the Director of Nuclear Reactor Regulation denies a request for initiation of show-cause proceedings in the absence of a connection between alleged financial constraints and a particular safety problem.

DD-82-9 COMMONWEALTH EDISON COMPANY (LaSalle County Generating Station, Units 1 and 2), Docket Nos. 50-373, 50-374; SHOW CAUSE; July 19, 1982; DIRECTOR'S DECISION UNDER 10 CFR 2.206

A The Director of Nuclear Reactor Regulation denies in part petitions filed under 10 CFR 2.206 by the Illinois Attorney General and the Illinois Friends of the Earth regarding deficiencies in construction of LaSalle Unit 1. Remaining matters concerning LaSalle Unit 2 are under investigation.

DD-82-10 PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-275, 50-276; OPERATING LICENSE; September 22, 1982; DIRECTOR'S DECISION UNDER 10 CFR 2.206

A The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 requesting the issuance of an order to Pacific Gas & Electric Co. to show cause why it should not be directed to file amendments to its pending operating license applications concerning the restructuring by PG&E of the Diablo Canyon Project organization and management.

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DIGESTS

ISSUANCES OF DENIALS OF PETITIONS FOR RULEMAKING

DPRM-82-1 GENERAL ATOMIC COMPANY, Docket No. PRM-95-1 (10 CFR Part 95); RULEMAKING; August 26, 1982; DENIAL OF PETITION FOR RULEMAKING

A The Nuclear Regulatory Commission is hereby denying a petition for rulemaking submitted by the General Atomic Company (GAC) in a letter to the Secretary of the Commission dated May 19, 1981. The petition requested that the Commission amend its regulation relating to the classification guidance provided by sub-topic 112 of Appendix A, "Classification Guide for Safeguards Information," to 10 CFR Part 95 to change the CONFIDENTIAL-National Security Information (CNSI) classification category to unclassified (U) or to delete sub-topic 112 from Appendix A.

DPRM-82-2 WELLS EDDLEMAN, Docket No. PRM-2-11; OPERATING LICENSE; September 30, 1982; DENIAL OF PETITION FOR RULEMAKING

A The Commission denies a petition requesting that the Commission amend its rules of practice for domestic licensing proceedings to require a separate operating license hearing for each power reactor unit at a nuclear power plant site on the grounds that the requested amendments are unnecessary, contrary to sound administrative practice, and inconsistent with existing law.

B There is no reason to believe that an amendment to NRC regulations to require an exclusive hearing on each reactor unit will result in or enhance the consideration of any issues which could not also have been considered and considered equally well in a hearing on two or more units.

C There is no reason to believe that the class of persons who could be included or excluded from participating in an operating license hearing on two or more reactor units constructed on a multiunit site would be different from the class of persons who would be included or excluded from participating in an OL hearingdevoted exclusively to any single reactor unit constructed on the same multiunit site.

D A separate operating license is issued for each reactor unit constructed on a multiunit site even though a consolidated hearing is held on several reactor units. Before an operating license for a reactor unit is issued, the Commission must make the requisite findings and determinations required by the regulations in effect at the time of license issuance.

E Rules of practice permit the Commission to consider two or more applications in the same licensing review and to consolidate two or more proceedings for hearing.

F Although used infrequently, the Commission's rules of practice also provide procedures for severing a proceeding dealing with two or more reactor units and for holding a separate operating license hearing on each reactor unit.

G The requested amendment would, if adopted, have the effect of requiring a mandatory OL hearing in connection with the issuance of an OL for each nuclear power reactor. In this respect, the requested amendment is contrary to the clear intent of Congress which, in 1962, amended section 189a. of the Atomic Energy Act of 1954 to eliminate the requirement for mandatory hearings in OL proceedings and to permit the Commission, in any case in which a hearing was not requested, to issue an OL without a hearing.

H The OL hearing is limited to examining substantial changes or conditions which have occurred since the issuance of the construction permit and issues which were deferred for consideration at the OL stage of the proceeding.

I It is inappropriate to consider the issue of sufficient NRC personnel in a licensing proceeding, including a hearing on an OL. Issues relating to Commission personnel involve the internal organization and management of the agency which is subject to Congressional authorization, and for which the Commission, not a license applicant or an intervenor, has sole responsibility.

J The Commission has amended its regulations in 10 CFR Parts 2 and 50 to eliminate entirely requirements for financial qualifications review and findings for electric utilities that are applying for construction permits or operating licenses for production or utilization facilities.

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